PART 1 - GENERAL

1.1 PURPOSE

A. The owner is pursuing a LEED v3/2009 Gold certification for the project.

B. The purpose of this Section is to define the LEED design and documentation submittal requirements the Design-Build contractor is responsible for and must include in his work. Reduction in scope of work or reduction in specified equipment efficiency will not be allowed for this project.

C. LEED documentation and calculations will be required for the prerequisites and credits as listed in this Section. The contractors involved in performing work for this Section shall provide documentation where necessary to assist the Design Professionals in completing all documentation to obtain LEED certification. The Design Professionals will be responsible for final documentation submittal, along with the other discipline design professionals, to USGBC. Contractor may obtain further program documentation by visiting www.usgbc.com.

D. Contractor(s) shall demonstrate and provide systems and functions that meet or exceed the requirements of the LEED certification process listed herein and in all other Division 23 Mechanical sections and the construction drawings.

1.2 APPLICABLE REQUIREMENTS

A. All work under this Section shall comply with the requirements of General Conditions, Supplemental Conditions, Special Conditions and Division 01, “General Requirements” and shall include all Mechanical Sections specified herein.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. All Division 23 Mechanical sections included herein.

1.4 APPLICABLE STANDARDS OR GUIDELINES

A. Provide in accordance with requirements of the United States Green Building Council (USGBC) for the following:
   1. LEED Version 3/2009 Building Design + Construction Reference Guide as published by the USGBC.
   2. LEED Green Building Rating System for Existing Buildings as published by the USGBC.
   3. LEED for Commercial Interiors Rating System as published by the USGBC.

1.5 DESIGN SUBMITTALS

A. Contractor shall submit LEED documentation and calculations as required as a project team member.
   1. The Design-Builder must coordinate with the project LEED Manager Professional who will be responsible for all aspects of the LEED process.
   2. The Design-Builder must designate an on-site field staff person to assist the LEED Manager Professional and be the contact for all LEED prerequisites and credit documentation, subcontractor supervision and submittal

coordination and to manage the Design-Builder's portions of the LEED-Online submittal process.

3. Documentation for LEED prerequisites and credit must be submitted in the format required by the USGBC for review using LEED-Online. Including all required credit audit documentation, completion of LEED calculators, and LEED credit templates.
4. Additional information on LEED and how to purchase copies of the LEED v3/2009 for BD+C: New Construction and major Renovation reference guide and how to use LEED-Online can be found at www.usgbc.org and https://LEEDonline.usgbc.org

1.6 QUALITY ASSURANCE (QA)

A. Design-Builder will identify one person on Design-Builder's staff to be responsible for compliance and coordination of responsibilities contained in this specification section.
   1. QA Responsibilities:
      a. Review Criteria Documents carefully for LEED
      b. Coordinate work of trades, subcontractors, and suppliers relating to LEED-related issues.
      c. Instruct workers relating to LEED-related issues.
      d. Oversee Design-Build LEED-related issues.
      e. Coordinate with Commissioning Authority on all Commissioning related activities and requirements.
   2. QA in Job Progress Meetings:
      a. All regularly scheduled job progress meetings will contain a heading for Environmental Procedures and LEED.
      b. All regularly scheduled job meetings will contain a heading for Commissioning Items on the Agenda.
      c. Environmental Procedures and Commissioning will be presented at the following meetings:
         1) Pre-construction meeting.
         2) Pre-installation meetings.
         3) Special sustainability issues meetings.
         4) Commissioning Scoping Meeting.

B. QA in Pre-Design Meeting: Soon after award of Agreement, the Design Builder must coordinate with the LEED Manager to schedule and conduct a meeting with the Owner and discipline designers to discuss the Design Builder's Proposed Environmental Procedure Compliance Plan(s).

1.7 LEED CERTIFICATION MEETINGS

A. Design-Builder will conduct LEED Certification meetings as required with his sub-consultants and subcontractors, in addition to those meetings outlined in Agreement. Meetings must be attended by the following personnel:
   1. Design-Builder's Project Manager
   2. Owner
   3. Design-Builder's LEED professional staff persons
   4. Sub-consultant representatives as appropriate to stage of work
   5. Subcontractor representatives as appropriate to stage of work

B. At a minimum, LEED certification goals and issues will be discussed at the following meetings:
   1. Preconstruction Meetings
   2. Progress Meetings
   3. Subcontractor Meetings
   4. Monthly Design-Build LEED Meetings. Meetings should be scheduled as a part of regularly scheduled job meetings on site.

1.8 LEED COMPLIANCE

A. Design-Builder must prepare and submit with its Proposal during the RFP Phase, a LEED Compliance Plan for determining compliance of proposed design with certification as defined by the LEED program. The Plan will include a LEED Credit matrix and a discussion accompanying and/or associated with each and every intended/selected credit point describing how the design will comply with that specific credit requirement. These in turn will be correlated to a timeline that will adequately illustrate:
   1. The definition and applied requirement of each credit in the design and/or construction.
   2. The implementation of that credit into the actual work.
   3. The expected compilation of the required credit submittal documents for each goal.
   4. The date of submission of all the required documentation to the US Green Building Council.
   5. The expected time period for corrections and resubmissions.
   6. The final approval for LEED Certification.

B. Along with the Design-Builder Submittal Procedures as specified elsewhere in the specification sections, submit the following:
   1. All proposed substitution requests that may affect meeting requirements of this Section and the LEED certification program.
   2. All LEED Submittals necessary for the certification process and in accordance with the LEED Compliance Plan.

C. This specification section is intended to supplement and not supersede the requirements of other sections of the specifications and drawings.

1.9 SUBMITTALS

A. Submit additional LEED submittal requirements included in other Sections of the Specifications.

B. Design-Builder must submit and receive approval from the USGBC on enough credits as required to achieve the required LEED Project Certification rating.

C. LEED submittals must be prepared and submitted using the LEED-Online Credit web based application and minimum system requirements.
   1. The Design-Builder is responsible for obtaining Project access to LEED-Online and joining the Project.
   2. Once the Design-Builder has joined the Project through LEED-Online, the LEED Consultant will assign the LEED credits that the Design-Builder is responsible for completing.

D. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.

E. Design-Build Materials Cost Data:
   1. Specific Material cost data for individual components and materials (not including labor) will be required to be provided as part of some LEED pre-requisite and credit requirements submittals.
   2. Consistent numbers must be applied to various LEED credits submittals requiring similar material cost data.

F. Complete required LEED -Online Credit Templates declaring that all LEED credit requirements have been met.

G. With submittals provide the following:
   1. Submittals for review with Basis of Design.
      a. LEED matrix identifying both the design and construction credits selected to achieve the LEED certification.
      b. Identify key players who are responsible for designing, implementing and documenting each LEED credit.
      c. Describe, through narrative, the approach that is taken to achieve each LEED credit. Include a schedule for task completion that corresponds with the overall Construction Schedule.
      d. Provide new performance criteria and concept drawings for any items required to achieve the LEED Certification which are not included in the Contract Documents.
   2. Submittals for review during Construction Documents Phase.
      a. Update the LEED matrix identifying the credits and points selected to achieve at a minimum, the required LEED certification.
   3. Submittals for review during Construction Phase.
      a. Update the LEED matrix identifying the credits and points selected to achieve at a minimum, the required LEED certification.
      b. Draft copies of the Construction Submittal Credit Templates (refer to LEED Design submittal requirements) and required LEED documentation.
   4. Submittals for review at time of Closeout.
      a. Final the LEED matrix identifying the credits and points selected to achieve at a minimum, the required LEED certification.
      b. Final copies of the Construction Submittal Credit Templates (refer to LEED Design submittal requirements) and required LEED documentation.
      c. LEED Certification documentation from USGBC.
   5. All approved Substitution Request Forms related to this Section.

1.10 SPECIAL PRODUCTS AND SUBSITUTIONS

A. Notify the Owner's Representative when Design-Builder wishes to substitute materials, equipment, or products that meet the aesthetic and programmatic intent of the Construction Documents and offer equivalent or increased environmental sensitivity to materials, equipment, or products specified to meet LEED requirements as indicated in the Construction Documents.

B. Substitutions that may affect LEED certification must be clearly stated as such.

C. Comply with the requirements of Division 1 as follows:
   1. Prior to submitting detailed information submit the following for initial review by the LEED Manager Professional.
      a. Product data including manufactures names, address, and phone number.
      b. Include copy of Material Safety Data Sheet (MSDS) if applicable.
      c. Description of the differences of the proposed substitution from specified product related to LEED requirements. Include description of environmental advantages of proposed substitution over specified product.
      d. The Design-Builder is responsible for re-submittal of all calculations, and documentation of products or material substitutions that affect LEED prerequisites and applies to any credits previously submitted as part of the LEED Design Application Submittal and all credits included in the LEED Construction Submittal. Products that do not meet these requirements should not be submitted for substitution.
      e. Substitutions of materials and products specified as part of the Agreement Documents in the following areas (but not necessarily limited to these items) will require review and potential re-submittal of LEED Design Application Pre-requisites and Credits:
         1) HVAC equipment, systems and controls
         2) CO2 monitoring system
      f. Substituted products must not be ordered or installed without written acceptance by the Owner.
   2. Requests for Substitutions
      a. Submit a separate request for each LEED related product substitution.
      b. Identify product Specification Section and LEED credit or credits, if applicable.
      c. List similar projects using product, dates of installation, and names of builders and owners.
      d. Give itemized comparison of proposed substitution with specified product, listing variations, and reference Specification Section and Article number.
      e. Include copy of Material Safety Data Sheet (MSDS) if applicable.
      f. Give cost data comparing proposed substitution with specified product and amount of net change to Agreement Sum. The cost data should be based on life cycle analysis for each affected product including annual energy consumption and maintenance costs.
      g. Identify the effect of substitution on construction schedule and changes required in other work of products.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 LEED DOCUMENTATION

A. General
   1. Documentation is listed according to the appropriate LEED prerequisite or credit. Some credits may be modified, removed or added during the course of construction as required to obtain the LEED rating as required by the

Owner. At the Owner's preference the Design-Build contractor is responsible for providing engineering support for available measures listed in the following sections.

B. General Requirements
1. Coordinate with the electrical contractor to ensure that the LEED electrical and lighting requirements are satisfied.
2. Coordinate with the General Contractor to ensure that the LEED general requirements are satisfied.

3.2 ENERGY AND ATMOSPHERE

A. Prerequisite 1 - Fundamental Building Systems Commissioning
1. See project commissioning specifications.

B. Prerequisite 2 - Minimum Energy Performance
1. Using one of three options provided by LEED establish that the project meets a minimum level of energy efficiency in excess of ASHRAE 90.1-2007.

C. Prerequisite 3 – Fundamental Refrigerant Management/CFC Reduction in HVAC&R Equipment
1. Provide the documentation as described in LEED™ Online, stating the building's HVAC&R systems do not use CFC-based refrigerants or that a phase-out plan is in place. Provided by Mechanical Engineer, confirmed by Contractor.

D. Credit 1 - Optimize Energy Performance
1. Collaborate with the project team to achieve and document energy savings performance as deemed cost effective by the project developer.
2. Demonstrate via summary printout from energy simulation software the design energy cost is less than the energy cost baseline budget as defined in ASHRAE/IESNA 90.1-2007 using Appendix G of the Standard.
3. ASHRAE Advanced Design Guides: (Maximum 1 points)
4. Comply with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Core Performance Guide. (3 points maximum possible)

E. Credit 2 – On-Site Renewable Energy. Provide documentation of energy produced on-site using solar thermal or other thermal based renewable energy systems compared to building annual energy cost from EA Credit 1.

F. Credit 3 – Enhanced Commissioning
1. Collaborate with the Commissioning agent engaged to provide enhanced commissioning services including
   a. Provide submittals of commissioned system for review.
   b. Provide assistance in the development of a systems manual.
   c. Provide coordination to assist the agent in confirming training requirements have been met.
   d. Respond to commissioning-related issues resulting from agent's 10 month post occupancy review.

G. Credit 5 - Measurement & Verification
   1. Develop and implement an M&V plan consistent with either Option D or Option B of the IPMVP.
   2. Provide a process for corrective action if at the end of one year, the results of the M&V plan examination of energy use indicates savings are not being achieved.

3.3 INDOOR ENVIRONMENTAL QUALITY

A. Prerequisite 1 - Minimum IAQ Performance
   1. Provide documentation that the project meets ASHRAE 62.1-2007 Standard for Ventilation for Acceptable Indoor Air quality and that the project has been designed using the ventilation rate procedure or a more strict local code.

B. Prerequisite 3 – Minimum Acoustical Performance
   1. If the project is a school, collaborate with the Architect to meet the acoustical requirements, including a maximum background noise from HVAC of 45 dBA.

C. Credit 1 – Outdoor Air Delivery Monitoring
   1. Monitor carbon dioxide concentrations within all densely occupied spaces. (greater than 25 occupants/100 sf)
   2. Provide outdoor air measurement device for systems serving non-densely occupied spaces.
   3. Documentation includes:
      a. Confirmation of the type of ventilation system and controls.
      b. Prepare design narrative describing the ventilation design and CO2 monitoring system.
      c. Drawings showing the location of sensors.

D. Credit 2 – Increased Ventilation
   1. Increase breathing zone outdoor air by a minimum of 30% above minimums specified by ASHRAE.
   2. Provide narrative of ventilation system for all mechanically ventilated spaces including intake volume for specific occupied zones to demonstrate the design exceeds standards by 30%.

E. Credit 3.1 - Construction IAQ Management Plan - During Construction
   1. Construction IAQ Management Plan: Collaborate with the general contractor to submit and implement an IAQ Management Plan for the construction process meeting the requirements of the SMACNA IAQ Guidelines. This plan should address the protection of the ventilation system components during construction and cleanup of contaminated components after construction is complete. SMACNA IAQ Guideline recommends control measures in five areas. This documentation shall be provided by Contractor and submitted to Mechanical Engineer. The IAQ Management Plan should address how compliance has been achieved in these required five areas as follows:
      a. HVAC Protection
         1) Shutdown of return side of existing HVAC system in areas affected by heavy construction.
         2) Provision of temporary filters if existing or new systems must remain operational during construction.

3) Dampening of supply and returns and sealing of openings in areas subject to construction dust.

b. Source Control
1) How will reduction of contaminants be reduced at the source?
2) What steps will be taken to employ low emitting products and sealants.
3) How will air-handling equipment be cycled off when not needed.

c. Pathway Interruption
1) Describe how the construction space will be ventilated as required to dilute contaminants.
2) Describe how occupied spaces adjacent to construction areas will be kept at positive pressure relative to spaces under construction.

d. Housekeeping: Describe how the following housekeeping objectives will be implemented:
1) Reduction of dust generated by work will be suppressed.
2) Maintaining a frequent cleaning frequency for dust and particulates.
3) Remove spills or excess applications of solvent-containing products as soon as possible.
4) Remove accumulated water and keep work areas as dry as possible.

e. Protect insulation materials from exposure to moisture.

f. Scheduling: Describe how overlap of construction activity and ongoing building occupancy activities will be minimized.

2. Provide the LEED™ Letter Template, signed by the responsible party, listing each different filtration medium used during construction and at the end of construction. Include Minimum Efficiency Reporting Value (MERV), manufacturer name and model number for MERV 8 filtration. This documentation shall be provided by Contractor and submitted to Mechanical Engineer.

F. Credit 3.2 - Construction IAQ Management Plan - Before Occupancy
1. Provide documentation of the building flush-out procedures including dates of building flush out to comply with the requirement of 14,000 cubic feet of outdoor air per square foot of floor area.
2. Credit 5 - Indoor Chemical & Pollutant Source Control
3. Provide the documentation that independent exhaust ventilation has been installed for housekeeping areas and copy/printing rooms at 0.5 cfm/sq/ft/ and a negative pressure differential of 7 Pa has been achieved.

G. Credit 6.2 Controllability of Systems for Thermal Comfort
1. Document the provisions made to provide individual comfort controls for a minimum of 50% of the building occupants to enable adjustment to individual needs.

H. Credit 7.1 - Thermal Comfort - ASHRAE 55-2004
1. For all mechanically ventilated spaces, provide documentation of the project compliance with ASHRAE Standard 55-2004. Include a table that identifies each thermally controlled zone, and summarizes for each zone the temperature and humidity control ranges and the method of control used.

3.4 INNOVATION & DESIGN PROCESS

A. Credit 1 - Innovation in Design
1. Coordinate with Architect and General Contractor for LEED™ Letter Template information required for applicable Innovation in Design credit(s).

END OF SECTION