

Addendum #2

Directorate of Facilities Engineering

27 June 2022

This Addendum modifies, amends, and supplements designated parts of the Contract Documents, Specifications and Drawings for:

Joint Vehicle Maintenance Facility, FMS #1, Saco, Maine, Project Number 230125, BGS Project Number 3100, Bid Number 22-018.

It shall be the responsibility of the Contractor to notify all Subcontractors and Suppliers for various portions of the work of any changes or modifications contained in this Addendum.

Notice of Bid Opening Extension

Due to the complexity of Addendum 1, the date of the Bid Opening has been extended to July 21, 2022, the final date for RFIs to be submitted is extended to 15 July 2022 at 12:00 noon, and the final Addendum will be issued no later than 18 July 2022 at 12:00 noon. All other provisions of the bid opening remain the same. Please see responses to RFIs below.

RFIs/Clarification Items:

1. Question: - In the structural notes it calls for slabs to be 4,000 psi, which is normal, but the next paragraph asks for the concrete to have a minimum flexural strength of 560 psi, which is normal for a tarmac, but not for a floor. All I know about 560 flex is that it is an 1-1/2" mix with a lot more stone in it than normal and placed at a 2" slump. The plans I saw at this point were a 4" and 6" floor which would be very difficult to place this and finish. Is this a mistake?
 - a. Answer: AE - Flexural strength for concrete slabs ~~should~~ shall (edited by Owner) be 424 psi
2. Question: Unit Prices 012200-3.1 lists a schedule of unit prices, but the unit prices do not appear on the bid form. Will these be submitted prior to the bid opening, or after the fact? Also, the alphabetical sorting of unit prices duplicates a couple of letters (example a, b, c, d,c, d, e...)
 - a. Answer: Owner - Disregard the discussion about unit prices that occurred at the Pre-bid meeting. The Section 01 22 00, Unit Prices is deleted as part of Addendum No 2. Unit prices will not be required to be provided. Please refer to Section 00 63 63 Change Order Forms and Section 01 26 00 Contract Modification Procedures.
3. Question: There was conversation at the pre-bid conference regarding material/consumable escalation with consideration of the +/- two year project completion timeframe. Will any justifiable adjustment be considered after the successful bidder is determined, and/or at the time of material installation?
 - a. Answer: Owner - Conversation at the pre-bid was about Unit Prices and not the original base scope of work. For the original scope Base Bid and ABIs, the answer is No. BGS does not allow cost variations since this is a lump sum, fixed price contract. There is no escalation clause, and escalation will not be considered.
 - b. With regard to the Unit Prices, see question2 of Addendum 2 above.
4. Question: Base bid includes galvanized metal deck for the roof. Alternate No. 9 "ABI #9 – Paint Exposed Roof Framing Sect. 012300 Para. 3.1M" notes "Field finish paint exposed steel roof framing and metal deck at locations indicated on the drawings AF101 through AF104." If Alternate No. 5 "ABI #5 Acoustical Metal Roof Deck" was selected, and understanding that paint may bridge and cover the holes in the Acoustical Metal Deck, are we to paint the exposed Acoustical Metal Deck if ABI# 5 and #9 are selected?
 - a. Answer: AE – Yes, ~~the intent is to~~ (edit by owner) paint the acoustical metal deck if both ABI #5 and #9 are selected.

5. Question: The project specification is requesting a fire rated glazing per ASTM E119 into operable frames. This ASTM reference is not allowed in operable frames, but rather fixed curtainwall type structures. Please confirm glazing spec for fire rated glazing and call outs at locations
 - a. Answer: AE - Fire-resistance-rated glazing complying with ASTM E119 is not required. Fire-protection-rated glazing is permitted, tested in accordance with NFPA 259 or UL 9, including hose-stream test, and shall comply with NFPA 80.
 - b. Refer to door schedule (see types and ratings) for locations requiring fire-protection-rated glazing. Refer to window schedule for locations requiring fire-protection-rated glazing; glazing type GL-3 shall be 45-minute fire rated.
6. Question: Revised LEED Spec Provided
 - a. Answer: AE/Owner – See Specifications section of this Addendum.
7. Question: In reviewing the plans and specifications, It calls for subbase gravel to be MDOT Type D Gravel. Specification section 312000 part 2.1 Soil Materials part D. lists Aggregate Subbase Gravel as “MDOT Type D with at least 90% passing the 1-1/2” sieve and not more than 12% passing the No. 200 sieve.” This is not the standard MDOT Type D gravel gradation specification. Please advise if Aggregate Subbase Gravel is MDOT Type D or is it as modified in the specifications. If it is as modified please furnish the complete aggregate subbase gravel gradation that is required for this project?
 - a. Answer: AE - Aggregate Subbase ~~should~~ shall (edit by owner) be MDOT Type D.
8. Question: In the Geotechnical Evaluation Report Section 6.2 Temporary Surcharge, bulletin 6 calls states “Wick drains should fully penetrate the marine clay deposit. A drainage layer should be placed over the native subgrade soils to facilitate drainage of water away from the surcharge area. The drainage layer should consist of 18” of crushed stone or structural fill.” The details (54, 57, 59) shown on plan sheet C-508 show a 12” thick drainage layer. Can this be clarified?
 - a. Answer: AE - Drainage layer ~~should~~ shall (edit by owner) be 12” minimum.
9. Question: We have received the following from a window treatment contractor: Specs say AT EXTERIOR WINDOWS
 - a. also states Single Flexshades and Dual Flexshades Which is wanted and Where ?
 - i. Answer: AE - Single-roller shades are not required. All shades at exterior windows shall be double-roller shades.
 - b. Confirm if Side & Sill channels are wanted AND where
 - i. Answer: AE - Side and sill channels are required per Spec Section 122413, 2.3.I; this applies to all shade locations.
 - c. AE103 -- First Floor C area - Is this the only area getting window treatments? Please confirm I found: Type A ---- 7, Type B --- 3, Type D ---- 2
 - i. Answer: AE - ~~The intent is f~~ (edit by Owner) For all exterior windows ~~to receive~~ provide and install (edit by owner) roller shades. Exterior windows are located in Areas C and D. Refer to floor plans for window locations and types.
10. Question: Pre-Bid Conference Agenda, dated June 16, 2022 Item B.4.e notes “Deadline for Bid RFI’s8 July 2022, 12:00 noon” and Item B.4.f “Final Addendum issued.....11 July 2022, 12:00 noon”. Addendum No. 1, dated June 21, 2022 “Notice of Bid Opening Extension.....has been extended to July 21, 2022.” Should we assume RFI Due date is commensurate with the Bid Extension and Deadline for RFI’s will now be July 15, 2022 at 12:00 noon with Final Addendum Issues July 18, 2022 at 12:00 noon?
 - a. Answer: Owner - Deadline for RFI’s will now be July 15, 2022 at 12:00 noon with Final Addendum Issued not later than July 18, 2022 at 12:00 noon.
11. Question: First request for Civil CAD Files was received with Agreement to Release Electronic Files
 - a. Answer: AE – Civil CAD file released via DoD SAFE. Note, the civil CAD files will be released to any contractor submitting the Agreement to Release Electronic Files.
12. Question: Second request for Civil CAD Files was received with Agreement to Release Electronic Files
 - a. Answer: AE - Civil CAD file released via DoD SAFE. Note, the civil CAD files will be released to any contractor submitting the Agreement to Release Electronic Files.

13. Question: Section 01 22 00 Unit Prices. Are we to provide Unit Prices, as noted in 01 22 00, with Bid Form 00 14 13 at time of Bid or after Notice of Intent to Award?
- a. Answer: AE - See Question 2 of Addendum 2 above. The Section 01 22 00, Unit Prices is deleted as part of Addendum No 2. Unit prices will not be required to be provided. Please refer to Section 00 63 63 Change Order Forms and Section 01 26 00 Contract Modification Procedures.

Note that Approximately 20 additional RFIs are being reviewed by the AE at this time. Additional Addenda will be issued as information is made available to the Owner.

Specification Items:

1. Remove Section 00 01 10 Table of Contents and replace with revised Section 00 01 01 Table of Contents **attached**: Note the following change:
 - a. Section 01 22 00 Unit Prices has been deleted by the Owner.
2. Remove Section 01 22 00 Unit Prices. This requirement has been deleted by the Owner.
3. Remove Section 01 81 13 Sustainable Design. Replace with revised Section 01 81 13 Sustainable Design (**Attached**). Note the changes described below.
 - a. The sustainable design requirement is LEED V4 Silver. Incorrect references to LEED Certified have been revised to LEED V4 Silver and the revised Checklist has been provided.

Drawing Items: No revised drawings are included in Addendum 2

Attachments:

- 1) Saco FMS 1 Section 00 01 10 Table of Contents Addendum 2
- 2) Saco FMS 1 Section 01 22 00 Sustainable Design Requirements Addendum 2

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SECTION 018113 - SUSTAINABLE DESIGN REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes administrative requirements and procedures for compliance and documentation for the Joint Vehicle Maintenance Facility in Saco, Maine to obtain minimum LEED ~~Certified~~ Silver for Building Design and Construction for (LEED-BD+C) certification under the US Green Building Council's LEED BD+C - NC v4.0/4.1 (where indicated) rating system.
- B. Related Sections:
 - 1. Section 013300 "Submittal Procedures."
 - 2. Section 015100 "Construction Indoor Air Quality."
 - 3. Section 015723 "Temporary Storm Water Pollution Control."
 - 4. Section 017419 "Construction Waste Management and Disposal."
 - 5. Section 019113 "General Commissioning Requirements."
 - 6. Divisions 03 through 12, 31, and 32 Sections: Specific requirements for materials in those Sections.

1.2 DEFINITIONS

- A. United States Green Building Council (USGBC): A non-profit group of leaders from every sector of the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work. The USGBC is administrator of the LEED Green Building Rating Systems.
- B. Leadership in Energy & Environmental Design (LEED): A green building rating system that provides independent third party verification of a project's sustainability.
- C. Indoor Air Quality (IAQ) Management Plan: Plan developed by the contractor to provide a healthy and safe indoor environment for workers during construction as well as the building's current and eventual occupants. The IAQ Management Plan must meet or exceed the recommendations of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3.
- D. Material Cost: The dollar value of materials being provided to the site, after any contractor mark-ups, inclusive of all transportation and tax fees but excluding equipment and labor costs.
- E. Environmental Product Declaration (EPD): An independently verified report based on life-cycle assessment studies that have been conducted according to a set of common rules for each product category and then peer-reviewed.

- F. Cradle to Gate Assessment: Analysis of a product's partial life cycle, from resource extraction (cradle) to the factory gate (before it is transported for distribution and sale). It omits the use and the disposal phases of the product.
- G. Cradle to Grave: Analysis of a product's full life cycle, from resource extraction (cradle) to the disposal phase (grave).
- H. Life Cycle Assessment: An evaluation of the environmental effects of a product from cradle to grave, as defined by ISO 14040-2006 and ISO 14044-2006.
- I. Third-party Verified Corporate Sustainability Reports (CSR): A report that outlines the environmental impacts of extraction operations and activities associated with the manufacturer's product and the product's supply chain. Corporate sustainability reports must be in line with one of the following: Global Reporting Initiative (GRI) Sustainability Report, Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises, U.N. Global Compact, and ISO 26000.
- J. Extended Producer Responsibility (EPR): Products whose manufacturer has established measures to reclaim its products at the end of their useful life and to recycle them into the same product.
- K. Product Category Rules: A set of rules, requirements, and guidelines for developing Environmental Product Declarations.
- L. Program Operator: An organization that ensures EPDs meet the product category rules (PCRs) for the associated product category. The program operator doesn't do the actual life-cycle assessments. UL Environment is the leading program operator in the United States.
- M. Product-Specific Environmental Product Declaration (EPD): A product with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that has at least a cradle to gate scope.
- N. Product-Specific Type III Environmental Product Declaration (EPD): A product with a with third-party certification, including external verification, in which the manufacturer is explicated recognized by the program operator. The product specific Environmental Product Declaration shall conform to ISO 14025, ISO 14040, ISO 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope.
- O. Industry-wide Environmental Product Declaration (EPD): A product with a with third-party certification, including external verification, in which the manufacturer is explicated recognized by the program operator. The industry-wide Environmental Product Declaration shall conform to ISO 14025, ISO 14040, ISO 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope. Also referred to as a "generic" Environmental Product Declaration.
- P. Bio-based Materials: A product that meets the Sustainable Agriculture Network's Sustainable Agriculture Standard. Bio-based raw materials shall be tested using ASTM Test Method D6866 and be legally harvested, as defined by the exporting and receiving country.

- Q. Composite Wood and Agrifiber: Products such as particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates, and door cores that are a composite of wood and/or plant material pressed and adhered together.
- R. Chain of Custody (COC): Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer and supplier are certified for chain of custody by an FSC-accredited certification body.
- S. Recycled Content: The percentage by weight of a material's constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
 - a. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
 - b. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer or post industrial recycled materials.
 - c. Recycled content of materials shall be defined in accordance with the International Organization for Standardization document, ISO 14021-1999 – Environmental labels and declarations – self declared environmental claims (Type II environmental labeling). www.iso.org
- T. Pre-consumer Recycled Content: Matter diverted from the waste stream during the manufacturing process, determine as the percentage of material, by weight.
- U. Post-consumer Recycled Content: Waste generated by households or commercial, industrial, and institutional facilities in their role as end users of a product that can no longer be used for its intended purpose.
- V. Regionally Extracted, Processed and Manufactured Materials: Materials that are extracted, harvested, or recovered; processed; and manufactured within a radius of 100 miles (160 km) from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.
- W. Health Product Declaration: A standard format for reporting product content and associated health information for building products and materials.
- X. GreenScreen® for Safer Chemicals: A method for comparative chemical hazard assessment and their potential effect on human health and the environment.
- Y. Volatile Organic Compound (VOC): Carbon compounds considered indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and wellbeing of installers and occupants.
- Z. Wet Products: Materials and products installed in wet form, including paints, sealants, adhesives, and special coatings.

1.3 PROJECT GOALS

- A. The proposed project is designed to be sustainable, with the intent of incorporating the following qualities:
1. The project will minimize its effect on the environment by selecting environmentally friendly building materials and utilizing sustainable construction practices.
 2. The project will provide a healthy and comfortable space for its occupants by developing and following an Indoor Air Quality Management Plan during construction, by selecting only non-toxic and low-emitting materials, and by designing the building's systems to provide tenants with exceptional indoor air quality.
 3. The finished project will consume significantly less energy and water than a typical code-compliant building through the use of premium efficiency equipment and designing efficient building systems.
- B. The proposed project is targeting a minimum ~~CERTIFIED Silver~~ from the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design Building Design and Construction (LEED-BD+C) version 4.0 and version 4.1 (where indicated) Green Building Rating System. The following are expected of all contractors and sub-contractors:
1. Comply with LEED-NC version 4.0 and 4.1 (where indicated) requirements for those credits being targeted.
 2. Refer to LEED Scorecard that follows this Section.
 3. Refer to LEED Product Matrix that follows this Section.
 4. Refer to individual Specification Sections for additional requirements.

1.4 MEETINGS

- A. Prime Contractor shall conduct LEED Certification meetings at 25%, 50% and 100% construction completion, in addition to those meetings outlined in Section 013100 Project Management and Coordination.
1. The meetings shall include, at a minimum:
 - a. Prime Contractor's Project Manager
 - b. Owner's Representative
 - c. Prime Contractor's LEED Representative
 - d. All other attendees designated by Owner's Representative
 - e. Sub-Contractor Representatives as appropriate to stage of work
 2. At a minimum, LEED certification goals and issues shall be discussed at the following meetings:
 - a. Preconstruction Meetings
 - b. Progress Meetings
 - c. Subcontractor Meetings
 - d. LEED Certification Meetings (outlined above). Meeting should be scheduled as a part of regularly scheduled job meetings on site.

1.5 SUBMITTAL REQUIREMENTS

- A. Coordination of Submittals: Coordinate LEED submittals with general submittal requirements as indicated in Section 013300 – SUBMITTAL PROCEDURES.
- B. LEED Action Plans: Provide preliminary hard copy submittals within 14 days of date established for commencement of the Work indicating how the following requirements will be met.
 - 1. Materials & Resources Prerequisite and Credit: Construction and Demolition Waste Management complying with Division 01 Section "Construction Waste Management."
 - 2. Materials & Resources Credit: Building product disclosure and optimization – sourcing of raw materials: list of proposed materials with recycled content, proposed regionally extracted, processed and manufactured materials, and proposed FSC-certified wood products
 - 3. Indoor Environmental Quality Credit: Construction Indoor Air Quality Management Plan: submit a draft copy of the plan for review, complying with Section 015100 – Construction Indoor Air Quality
- C. Contractor is responsible for completion and transmittal of ALL construction-related tracking required for LEED certification including:
 - 1. LEED Submittal Coversheets: All project submittals must be accompanied by a completed LEED coversheet. Submittal packages must also include documentation in support of the sustainability claims made on the LEED coversheet, including:
 - a. Cost of each material or product, excluding labor and equipment
 - b. From manufacturer, for each product's environmental attributes. The team's sustainability consultant will be responsible for obtaining a report describing raw materials suppliers, complete content inventory for the product, and/or environmental product declaration.
 - c. Highlight compliance with all requirements for low-emitting materials as noted in Section 2 (Products)
 - 2. Providing and following an Erosion and Sedimentation Control Plan. See Section 312500 – Erosion and Sedimentation Control Plan.
 - 3. Providing and following a Construction Waste Management Plan and ongoing documentation of construction and demolition waste recycling / salvage rates for all categories of waste. See Section 017419 - Construction Waste Management.
 - 4. During construction, meet or exceed all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter See Section 015100 – Construction Indoor Air Quality

5. Providing monthly tracking and progress updates on the following credits. The sustainability consultant will be responsible for final documentation for submission to the Green Business Certification Inc (GBCI).
 - a. Materials & Resources Prerequisite and Credit: Construction and Demolition Waste Management
 - b. Materials & Resources Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials
 - c. Indoor Environmental Quality Credit: Low Emitting Interiors
 - d. Indoor Environmental Quality Credit: Construction IAQ Management Plan
 - e. Indoor Environmental Quality Credit: Indoor Air Quality Assessment
6. Contractor to maintain Materials Credit Tracking Sheet monitoring the project's progress towards targeted LEED Materials and Resources Credits. Tracking Sheet to be presented at construction meetings.
7. Contractor to maintain a Low Emitting Materials Tracking Sheet monitoring the project's progress towards targeted LEED Indoor Environmental Quality Credits. Tracking Sheet to be presented at construction meetings.
8. Contractor to package each submittal individually using a LEED Transmittal Cover Sheet verifying that submittals comply with LEED Requirements and that appropriate documentation is included. See sample provided.
9. Project Materials Cost Data: Provide itemized and total cost for ALL building materials under Divisions 2-10, 12, 31, and 32 used for Project, excluding labor and equipment.
10. Contractor to provide Commissioning Authority with a copy of approved submittals for all equipment to be commissioned as well as documentation requested by the Commissioning Authority which is necessary for the commissioning process. This may include: detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, full details of any owner-contracted tests, fan and pump curves, full factory testing reports, if any, and full warranty information including all responsibilities of the Owner to keep the warranty in force clearly identified. The actual field checkout sheet forms to be used by the factory or field technicians shall be provided to the Commissioning Authority.

1.6 SPECIAL PRODUCTS AND SUBSTITUTION PROCEDURES

- A. In addition to the requirements of Section 012500 – Substitution Procedures, the special substitution requirements described here apply only to the LEED certification related materials and requirements and environmental products and procedures identified in this Section.
- B. Notify Owner and Architect when contractor 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.

- C. Substitutions that may affect LEED certification must be clearly stated as such.
- D. Comply with the requirements of Section 012500 – Substitution Procedures, except as follows:
 - 1. Prior to submitting detailed information required under Section 012500 – Substitution Procedures, submit the following for initial review by the architect.
 - a. Product data including manufacturer’s 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 contractor is responsible for re-submittal of all calculations, and documentation of products or material substitutions that affect LEED prerequisites and credits referenced in this Section, and any credits previously submitted as part of the project’s 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 Contract documents in the following areas (but not necessarily limited to these items) will require review and potential re-submittal of LEED Design Credit Application Pre-requisites and Credits:
 - i. Irrigation System
 - ii. Rainwater Management System
 - iii. Roofing products and materials
 - iv. Plumbing fixtures and controls
 - v. Interior and Exterior Lighting systems and controls
 - vi. HVAC equipment, systems and controls
 - vii. CO₂ monitoring system
 - viii. Acoustical Performance
 - f. Substituted products shall 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 by Specification Section and LEED credit or credits, if applicable.
 - c. List similar projects using product, dates of installation, and names of Contractor and Owner.
 - 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 Contract Sum. The cost data should be based on life cycle analysis for each affected product including annual energy consumption and maintenance costs.
- g. State effect of substitution on construction schedule and changes required in other work of products.

1.7 LEED DOCUMENTATION SUBMITTALS

- A. For all credits: LEED documentation submittals must be prepared and submitted using the LEED-Online Credit web based application (<https://www.usgbc.org/leedonline/>) and minimum system requirements.
- B. Once the Contractor has joined the project through LEED-Online, the LEED Project Administrator will assign the LEED credits that the contractor is responsible for completing.
- C. Once the Contractor has joined the project through LEED-Online, the LEED Project Administrator will assign the LEED credits that the contractor is responsible for completing.
 - 1. NOTE: LEED Online is only accessible through Safari, Internet Explorer and Firefox at this time.
 - 2. NOTE: Each "Credit Form" is an editable Adobe pdf document. It may be completed or updated at any time prior to the LEED Construction Submittal. After you have completed documenting the credit, use the 'Save' button at the lower right hand corner of the Form to save the data online.
 - 3. Additional submittal documentation and back-up requirements should be uploaded to the "File Uploads" section of LEED-Online following the required documentation support for each credit.
- D. Sustainable Sites Prerequisite Construction Activity Pollution Prevention. Using the LEED Online Credit form, provide:
 - 1. A narrative describing the implemented erosion and sedimentation control measures and how these were maintained
 - 2. Photographic evidence of the implemented measures from various stages throughout construction.
- E. Water Efficiency Prerequisite and Credit Water Metering and Energy & Atmosphere Prerequisite and Credit Energy Metering: Product Data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy and water consumption performance over time.
- F. Materials & Resources Prerequisite and Credit: Construction and Demolition Waste Management: Comply with Division 01 Section "Construction Waste Management." Using the LEED Construction and Demolition Waste Calculator and the LEED Credit Form:
 - 1. Complete the construction waste calculation tables including: General description of each type/category of waste generated; location of receiving agent

- (recycler/landfill) for waste; quantity of waste diverted (by category) in tons or cubic yards.
2. Provide a narrative describing the project's construction waste management approach including a copy of the project's construction waste management plan. Please provide any additional comments or notes to describe special circumstances or considerations regarding the project's credit approach.
 3. Provide the Construction Waste Management Plan.
 4. Provide the hauling/recycling tags/tickets or receipts from the project
 5. Provide project-specific documentation of recycling rate for commingled facilities
- G. Materials & Resources Credit: Building Product Disclosure and Optimization – Environmental Product Declaration- EPDs - Environmental Product Declarations Using the LEED Building Product Disclosure and Optimization Calculator and the LEED Online Credit Form:
1. Provide a list of manufactures providing EPDs.
 2. Provide a list of each separate product holding an EPD.
 3. Provide copy of each EPD including statement type for each EPD.
- H. Materials & Resources Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials, Leadership Extraction Practices - Recycled Content Using the LEED Building Product Disclosure and Optimization Calculator and the LEED Online Credit Form:
1. Provide the total project materials cost per “Project Materials Cost Data” in the Submittals section above.
 2. Provide a tabulation of each material used on the project that is being tracked for recycled content. The tabulation must include a description of the material, the manufacturer of the material, the product cost, the pre-consumer and/or post-consumer recycled content percentage, and the source of the recycled content data.
 3. Provide a tabulation of each material used on the project that is being tracked for regional content. The tabulation must include a description of the material; the manufacturer of the material; the product cost; the percentage of the product by weight that meets both the extraction and manufacturer location criteria; distance between the project site and extraction/harvest/recovery site; and distance between the project site and final manufacturing location.
 4. Provide Manufacturer cut sheets, literature, or letters highlighting the overall post-consumer and/or post-industrial recycled content percentages (by weight) of each listed product
 5. Provide Manufacturer cut sheets, literature, or letters highlighting address location of each material's extraction/harvest/recovery and manufacturing / processing sites AND a map (Yahoo Maps, Google Maps or equivalent) indicating distances from each location to the project site.
- I. Materials & Resources Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials, Leadership Extraction Practices - FSC Certified Wood Products. Using the LEED Building Product Disclosure and Optimization Calculator and the LEED Online Credit Form:

1. Provide total of all new, permanently installed wood-based construction materials cost per "Project Materials Cost Data" in the Submittals section above.
 2. Provide a list of items (and/or components of products) claimed as FSC-certified, including product type, manufacturer, and the entity's Chain of Custody (COC) certification number. (Each product name can then be cross-referenced with the manufacturer or vendor COC number during the LEED certification review.) Visit www.fscus.org/green_building for more information.
 3. Provide official proof of FSC Chain of Custody certification of all fabricators including, but not limited to, millworkers and cabinet-makers, who modify or alter the FSC wood products before they are installed in the project.
 4. Provide materials invoices (showing costs) for each listed product
- J. Materials & Resources Credit: Building Product Disclosure and Optimization – Material Ingredients- Material Ingredient Reporting- Material Ingredient Reporting Using the LEED Building Product Disclosure and Optimization Calculator and the LEED Online Credit Form:
1. Provide a list of manufactures providing material ingredient reporting.
 2. Provide a list of each separate product providing material ingredient reporting.
 3. Provide copy of each material reporting statement including: Health Product Declaration, Cradle to Cradle Declare, ANSI/BIFMA e3 Furniture Sustainability Standard, Cradle to Cradle Material Health Certificate, or other USGBC approved program.
- K. Indoor Environmental Quality Credit low-Emitting Materials. Using the LEED Low Emitting Calculator and LEED Online Credit Form, provide the following:
1. A listing of each interior applied paints and coating. Include the manufacture's name, product name, specific VOC data (in g/L less water) for each product, and the corresponding allowable VOC from the referenced standard: California Department of Public Health (CDPH) Standard Method v1.2-2017, using the applicable exposure scenario, VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective February 5, 2016. Include cut sheets, MSDS, or other manufacturer's data confirming compliance with the VOC limits.
 2. A listing of each indoor adhesive, sealant and sealant primer product used on the project. Include the manufacture's name, product name, specific VOC data (in g/L less water) for each product, and the corresponding allowable VOC from the referenced standard, California Department of Public Health (CDPH) Standard Method v1.2-2017, using the applicable exposure scenario, or SCAQMD Rule 1168, October 6, 2017. Include cut sheets, MSDS, or other manufacturer's data confirming compliance with the VOC limits.
 3. A listing of each composite wood and agrifiber product installed in the building interior, including those manufactured off-site, such as toilet partitions, backer board, door cores and engineered wood, including manufacture's name and product name. Confirm that the product meets the low formaldehyde emissions that meet the EPA TSCA Title VI or California Air Resources Board ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde resins. Include cut sheets or manufacturer literature or letters indicating the bonding agents for each composite wood and agrifiber

material used in the project, showing that no added urea-formaldehyde resins were used in these products or meets ULEF criteria.

4. A listing of each structural composite wood installed in the building interior, such as plywood, oriented-strand board, structural composite lumber, glued laminated timber, i-joists, cross-laminated timber, and finger-jointed lumber, including manufacturer's name and product name. Confirm that the product meets. Confirm that wood products are made with moisture resistant adhesives meeting ASTM 2559, have no surface treatments with added urea-formaldehyde resins or coatings, and are certified according to the applicable industry standard. Include cut sheets or manufacturer literature or letters indicating the bonding agents for each composite wood and agrifiber material used in the project, showing compliance with the applicable industry standard:
 - a. Plywood: compliant in accordance with Voluntary Product Standard - Structural Plywood (PS 1-09), Voluntary Product Standard – Performance Standard for Wood-Based Structural-Use Panels (PS 2-10), or one of the standards considered by CARB to be equivalent to PS 1 or PS 2: (AS/NZS 2269, EN 636 3S (including CE label), Canadian
 - b. Standards Association CSA O121 for Douglas fir plywood, CSA O151 for Canadian softwood plywood, for CSA O153 Poplar plywood, or CSAO325 for Construction sheathing)
 - c. Oriented strand board: specified with the Exposure 1 or Exterior bond classification in accordance with Voluntary Product Standard – Performance Standard for Wood-Based Structural-Use Panels (PS 2-10)
 - d. Structural composite lumber: compliant in accordance with Standard Specification for Evaluation of Structural Composite Lumber Products (ASTM D 5456-13)
 - e. Glued laminated timber: compliant in accordance with Structural Glued Laminated Timber (ANSI A190.1-2012)
 - f. I-joists compliant in accordance with Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists (ASTM D 5055-13)
 - g. Cross-laminated timber: compliant in accordance with Standard for Performance-Rated Cross-Laminated Timber (PRG 320-15)
 - h. Finger-jointed lumber labeled “Heat Resistant Adhesive (HRA)” in accordance with the American Softwood Lumber Standard (DOC PS-20 2015)
5. A listing of flooring installed in the project. Include manufacturer's documentation confirming that the product has been tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.2-2017, using the applicable exposure scenario.
6. A listing of ceiling products, including ceiling panels, ceiling tile, surface ceiling structures such as gypsum or plaster, suspended systems, and glazed skylights, installed in the project. Include manufacturer's documentation confirming that the product has been tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.2-2017, using the applicable exposure scenario.
7. A listing of insulation, including thermal and acoustic boards, batts, rolls, blankets, sound attention fire blankets, foamed-in place, loose-fill, blown, and

sprayed insulation, installed in the project. Include manufacturer's documentation confirming that the product has been tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.2-2017, using the applicable exposure scenario.

- L. Indoor Environmental Quality Credit Construction IAQ Management Plan. Provide the following:
1. A copy of the project's Indoor Air Quality Management Plan, highlighting the no-smoking policy
 2. Confirm if the permanently installed air handling equipment was used during construction.
 3. Six photographs at each of three different times during the construction period to highlight the implemented construction IAQ practices.
 4. List all filtration media (manufacturer, model number, MERV rating, location of installed filter) installed during construction and confirm that each unit was replaced prior to occupancy.
 5. A narrative describing protection measures for absorbent materials
- M. Indoor Air Quality Assessment: Provide the following:
1. A Flush-out Report documenting the required volume and duration of the flush-out and describing the project's specific flush-out procedures, with product data for filtration media used during flush-out and during occupancy.

OR

2. A copy of the Air Testing Report documenting the procedures for air testing, the locations, dates and results of each test.

PART 2 PRODUCTS

2.1 SUSTAINABLE MATERIALS

- A. Environmental Product Declarations: Provide at least 20 (after weighting) separate permanently installed products from at least five different manufacturers that met one of the criteria below.
1. Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
 2. Product-specific Type III EPD -- Internally Reviewed. Products with an internally critically reviewed LCA in accordance with ISO 14071. Products with product-specific internal EPDs which conform to ISO 14025, and EN 15804 or ISO 21930 and have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
 3. Industry-wide Type III EPD -- Products with third-party certification (Type III), including external verification, in which the manufacturer is explicitly recognized as a participant by the program operator. Products with industry-wide EPDs, which conform to ISO 14025, and EN 15804 or ISO 21930 and have at least a

cradle to gate scope are valued as one whole product for purposes of credit achievement calculation.

4. Environmental Product Declarations which conform to ISO 14025 and EN 15804 or ISO 21930 and have at least a cradle to gate scope.
 - a. Product-specific Type III EPD -- Products with third-party certification (Type III), including external verification and external critical review in which the manufacturer is explicitly recognized as the participant by the program operator are valued as 1.5 products for the purposes of credit achievement calculation.
- B. Leadership extraction practices: Provide products which meet at least one of the responsible extraction criteria below for at least 20%, by cost, of the total value of permanently installed building products in the project. Products sourced (extracted, harvested, manufactured, and purchased) within 100 miles (160 km) of the project site are valued at 200% of their cost.
1. Bio-based materials. Bio-based products shall meet the Sustainable Agriculture Network's Sustainable Agriculture Standard. Bio-based raw materials shall be tested using ASTM Test Method D6866 and be legally harvested, as defined by the exporting and receiving country. Exclude hide products, such as leather and other animal skin material.
 2. New wood products. Wood products shall be certified by the Forest Stewardship Council or USGBC-approved equivalent.
 3. Materials reuse. Reuse includes salvaged, refurbished, or reused products.
 4. Recycled content. Recycled content is the sum of postconsumer recycled content plus one-half the pre-consumer recycled content, based on cost.
 5. Extended producer responsibility (ie Cradle to Cradle Certified Products) Products purchased from a manufacturer (producer) that participates in an extended producer responsibility program or is directly responsible for extended producer responsibility. Products meeting extended producer responsibility criteria are valued at 50% of their cost for the purposes of credit achievement calculation.
- C. Heath Product Declarations: Provide at least 20 (after weighting) separate permanently installed products from at least five different manufacturers that met one of the criteria below and demonstrate the chemical inventory of the product to at least 0.1% (1000 ppm).
1. Manufacturer Inventory. The manufacturer has published complete content inventory for the product following these guidelines:
 - a. A publicly available inventory of all ingredients identified by name and Chemical Abstract Service Registration Number (CASRN) and/or European Community Number (EC Number).
 - b. Materials defined as trade secret or intellectual property may withhold the name and/or CASRN/EC Number but must disclose ingredient/chemical role, amount and hazard score/class using either:

1. Greenscreen List Translator (LT) score and/or Full GreenScreen Benchmark (BM)
2. The Globally Harmonized System of Classification and Labeling of Chemicals rev.6 (2015) (GHS)
 - a. The hazard screen must be applied to each trade secret ingredient and the inventory lists the hazard category for each of the health hazards included in Part 3 of GHS (e.g. “GHS Category 2 Carcinogen”).
2. Health Product Declaration. The end use product has a published and complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard.
3. Cradle to Cradle. Product has Material Health Certificate or is Cradle to Cradle Certified™ under standard version 3 or later with a Material Health achievement level at the Bronze level or higher.
4. Declare. The Declare product label meet the following requirements:
 - a. Declare labels designated as Red List Free or Declared.
 - b. Declare labels designated as LBC Compliant that demonstrate content inventory to 0.1% (1000 ppm).
5. ANSI/BIFMA e3 Furniture Sustainability Standard. The documentation from the assessor or scorecard from BIFMA must demonstrate the product earned at least 3 points under 7.5.1.3 Advanced Level in e3-2014 or 3 points under 7.4.1.3 Advanced Level in e3-2012.
6. USGBC approved program. Other USGBC approved programs meeting the material ingredient reporting criteria.

2.2 LOW-EMITTING MATERIALS

- A. Building products shall be in accordance with California Department of Public Health (CDPH) Standard Method v1.2–2017, and comply with the VOC limits in Table 4-1 of the method. Additionally, the range of total VOCs after 14 days (336 hours) was measured as specified in the CDPH Standard Method v1.2 and is reported (TVOC ranges: 0.5 mg/m³ or less, between 0.5 and 5 mg/m³, or 5 mg/m³ or more). Laboratories that conduct the tests must be accredited under ISO/IEC 17025 for the test methods they use. Products used in school classrooms must be evaluated using the classroom scenario, products used in other spaces must be evaluated using the default private office scenario
- B. All paints and coatings wet-applied on site shall meet the applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective February 5, 2016.
 1. Interior Flat Coating or Primer – 50 g/L
 2. Interior Non-Flat Coating or Primer – 50 g/L
 3. Anti-corrosive/Anti-rust coating – 100 g/L
 4. Primers/Sealers/ and Undercoaters – 100 g/L

5. Clear Wood Finish: Lacquer- 275 g/L
 6. Clear Wood Finish: Sanding Sealer -275 g/L
 7. Clear Wood Finish: Varnish – 275 g/L
 8. Clear Wood Finish: Brushing Lacquer- 275 g/L
 9. Floor Coatings – 50 g/L
 10. Fire Protective Coatings – 150 g/L
 11. Sealers and Under coaters – 100 g/L
 12. Shellac: Clear – 730 g/L
 13. Shellac: Pigmented – 550 g/L
 14. Stain: 100 g/L
 15. Concrete Curing Compounds: 100 g/L
 16. Japans/Faux Finishing Coatings: 350 g/L
 17. Magnesite Cement Coatings: 450 g/L
 18. Waterproofing Sealers – 100 g/L
 19. Waterproofing Concrete/Masonry Sealers – 100 g/L
 20. Wood Preservatives – 350 g/L
 21. Low-Solids Coatings – 120 g/L
 22. Colorant – Architectural coatings – 50 g/L
- C. All adhesives and sealants wet-applied on site shall meet the applicable chemical content requirements of SCAQMD Rule 1168, October 6, 2017, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168. The provisions of SCAQMD Rule 1168 do not apply to adhesives and sealants subject to state or federal consumer product VOC regulations.
1. Indoor Carpet Adhesives - 50 g/L
 2. Carpet Pad Adhesives - 50 g/L
 3. Wood Flooring Adhesive – 100 g/L
 4. Rubber Floor Adhesives - 60 g/L
 5. Sub floor Adhesives - 50 g/L
 6. Ceramic Tile Adhesives - 65 g/L
 7. VCT and Asphalt Tile Adhesives - 50 g/L
 8. Dry Wall and Panel Adhesives - 50 g/L
 9. Cove Base Adhesives - 50 g/L
 10. Multipurpose Construction Adhesives - 70 g/L
 11. Structural Glazing Adhesives - 100 g/L
 12. PVC Welding - 510 g/L
 13. CPVC Welding - 490 g/L
 14. ABS Welding – 325 g/L
 15. Plastic Cement Welding - 250 g/L
 16. Adhesive Primer for Plastic - 550 g/L
 17. Contact Adhesive - 80 g/L
 18. Special Purpose Contact Adhesive - 250 g/L
 19. Structural Wood Member Adhesive - 140 g/L
 20. Top and Trim Adhesive - 250 g/L
 21. Metal to Metal - 30 g/L
 22. Plastic Foams substrate specific - 50 g/L
 23. Porous Material (except wood) substrate specific - 50 g/L
 24. Wood substrate specific - 30 g/L
 25. Fiberglass substrate specific - 80 g/L
 26. Architectural Sealant - 250 g/L

27. Roadway Sealant - 250 g/L
 28. Other Sealant - 420 g/L
 29. Architectural, Non-Porous – Sealant Primer – 250 g/L
 30. Architectural, Non-Porous– Sealant Primer – 775 g/L
 31. Other– Sealant Primer 750 g/L
- D. If the applicable regulation requires subtraction of exempt compounds, any content of intentionally added exempt compounds larger than 1% weight by mass (total exempt compounds) shall be disclosed.
- E. Methylene chloride and perchloroethylene shall not be intentionally added in paints, coatings, adhesives, or sealants.
- F. Composite Wood Evaluation. Product meets one of the following:
1. EPA TSCA Title VI or California Air Resources Board (CARB) ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or
 2. EPA TSCA Title VI or CARB ATCM formaldehyde requirements for no added formaldehyde resins (NAF).
 3. Tested per EN 717-1:2014 for formaldehyde emissions and complies with emissions class E1.
 4. Structural composite wood product made with moisture resistant adhesives meeting ASTM 2559, no surface treatments with added urea-formaldehyde resins or coatings, and certified according to one of the following industry standards:
 - a. Plywood: compliant in accordance with Voluntary Product Standard - Structural Plywood (PS 1-09), Voluntary Product Standard – Performance Standard for Wood-Based Structural-Use Panels (PS 2-10), or one of the standards considered by CARB to be equivalent to PS 1 or PS 2: (AS/NZS 2269, EN 636 3S (including CE label), Canadian
 - b. Standards Association CSA O121 for Douglas fir plywood, CSA O151 for Canadian softwood plywood, for CSA O153 Poplar plywood, or CSAO325 for Construction sheathing)
 - c. Oriented strand board: specified with the Exposure 1 or Exterior bond classification in accordance with Voluntary Product Standard – Performance Standard for Wood-Based Structural-Use Panels (PS 2-10)
 - d. Structural composite lumber: compliant in accordance with Standard Specification for Evaluation of Structural Composite Lumber Products (ASTM D 5456-13) o Glued laminated timber: compliant in accordance with Structural Glued Laminated Timber (ANSI A190.1-2012)
 - e. -joists compliant in accordance with Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists (ASTM D 5055-13)
 - f. Cross-laminated timber: compliant in accordance with Standard for Performance-Rated Cross-Laminated Timber (PRG 320-15)
 - g. Finger-jointed lumber labeled “Heat Resistant Adhesive (HRA)” in accordance with the American Softwood Lumber Standard (DOC PS-20 2015)

2.3 INDOOR AIR QUALITY

- A. Air filters treating outdoor air installed in the air handling unit shall have a MERV rating of 13 or higher.

2.4 WATER EFFICIENCY

- A. Install only EPA WaterSense Labeled water closets, showerheads, and urinals. Refer to Section 220000 - Plumbing.
- B. Install only ENERGY STAR clothes washers, dishwashers, and ice machines.
- C. No equipment or appliances that reject heat may use once through cooling with potable water.

PART 3 EXECUTION

3.1 CONSTRUCTION ACTIVITY POLLUTION PREVENTION

- A. SS prerequisite: Comply with Division 31 Section "Erosion and Sedimentation Control Plan"

3.2 CONSTRUCTION WASTE MANAGEMENT

- A. MR prerequisite and MR credit: Comply with Division 1 Section "Construction Waste Management." Divert at least 75% of construction and demolition waste from landfill from at least 4 material streams.

3.3 INDOOR AIR QUALITY CONSTRUCTION MANAGEMENT PLAN – DURING CONSTRUCTION

- A. LEED IEQ credit Construction IAQ Management Plan: Comply with Division 1 Section "Indoor Air Quality Management"
- B. During construction Trade Contractor shall meet or exceed the minimum requirements of the SMACNA IAQ Guideline for Occupied Buildings under Construction, 2nd Edition, 2007, ANSI/SMACNA 008-2008 (Chapter 3).
- C. Temporary Construction Ventilation: Prime Trade Contractor shall Maintain sufficient temporary ventilation of areas where materials are being used that emit VOC's, and maintain ventilation continuously during installation, and until emissions dissipate after installation. If continuous ventilation is not possible via the building's HVAC system(s) then ventilation shall be supplied via open windows and temporary fans, sufficient to provide no less than three air changes per hour. Prime Trade Contractor shall ensure that:
 - 1. The period after installation shall be sufficient to dissipate odors and elevated concentrations of VOCs. Where no specific period is stated in these Specifications, a time period of 72 hours shall be used.

2. All areas shall be vented directly to outside. Areas shall not be vented to other enclosed areas.
- D. During dust producing activities (e.g. drywall installation and finishing) ventilation system shall be off, and openings in supply and return HVAC system shall be protected from dust infiltration. Provide temporary ventilation as required.
- E. Preconditioning: Prior to installation, Prime Trade Contractor shall allow products which have odors and VOC emissions to off-gas in dry, well-ventilated space outside of building for 14 calendar days, in order to allow for reasonable dissipation of odors and emissions.
- F. Prime Trade Contractor shall complete all interior finish material installation prior to Substantial Completion to allow time for building flush out as described below. Submit notification to Owner's Representative when all interior finish material installation is complete, highlighting the date of completion.

3.4 INDOOR AIR QUALITY CONSTRUCTION MANAGEMENT PLAN – POST CONSTRUCTION

- A. Building Flush Out: Select one of the following two options (prior to occupancy or during occupancy), to be implemented after construction ends and the building been completely cleaned. All interior finishes, such as millwork, doors, paint, carpet, acoustic tiles, and movable furnishing, must be installed, and major VOC punch list items must be finished.
 1. Prior to Building Occupancy: Prime Trade Contractor shall install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of gross floor area while maintaining an internal temperature of at least 60°F (15°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%. The duration of the flush-out must be calculated as follows:

$$\text{Cubic feet of outdoor air needed prior to occupancy} = \text{Area (ft}^2\text{)} \times 14,000 \text{ cfm}$$

$$\text{Duration (Days)} = \text{Cubic Feet needed} / (\text{air handler capacity} / 1440 \text{ minutes/day})$$
 - a. Replace all outside air filtration media prior to occupancy. Filtration media shall have a MERV of 13 as determined by ASHRAE 52.2.
 2. During Occupancy: if occupancy is desired before the flush-out is completed, the space may be occupied only after delivery of a minimum of 3,500 cubic feet of outdoor air per square foot of gross floor area while maintaining an internal temperature of at least 60°F (15°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%.
 3. Once the space is occupied, it must be ventilated at a minimum rate of 0.30 cubic foot per minute (CFM) per square foot of outdoor air or the design minimum outdoor air rate determined by the ASHRAE 62.1-2010 calculations determined in IEQ Prerequisite Minimum indoor Air Quality performance, whichever is greater. During each day of the flush-out period, ventilation must begin at least three hours before occupancy and continue during occupancy. These conditions

must be maintained until a total of 14,000 cubic feet per square foot of outdoor air has been delivered to the space. The duration of the flush-out must be calculated as follows:

Cubic feet of outdoor air needed prior to occupancy = Area (ft²) X 3,500 cfm

Cubic feet of outdoor air needed during occupancy = Area (ft²) X 10,500 cfm

Duration (Days) = (Area (ft²) X 14,00 cfm)/(air handler capacity/1440 minutes/day)

- B. IAQ Testing: After construction ends and before occupancy, but under ventilation conditions typical for occupancy, conduct IAQ testing using protocols consistent with the methods in the table below for all occupied spaces.
1. Use current versions of ASTM standard methods, EPA compendium methods, or ISO methods, as indicated.
 2. Conduct all measurements before occupancy during normal occupied hours, with the building ventilation system started at the normal daily start time and operated at the minimum outdoor airflow rate for the occupied mode throughout the test.
 3. For each sampling point where the concentrations exceed the limit, take corrective action and retest for the noncompliant contaminants at the same sample points. Repeat until all requirements are met.

Test for the particulate matter (PM) and inorganic gases listed in Table 1, using an allowed test method, and demonstrate the contaminants do not exceed the concentration limits listed in the table.

Table 1.

Contaminant (CAS#)	Concentration Limit (µg/m ³)	Allowed Test Methods
Carbon monoxide (CO)	9 ppm; no more than 2 ppm above outdoor levels	ISO 4224 EPA Compendium Method IP-3 GB/T 18883-2002 for projects in China Direct calibrated electrochemical instrument with accuracy of (+/- 2% ppm <50 ppm minimum accuracy).
PM 10	ISO 14644-1:2015, cleanroom class of 8 or lower 50 µg/m ³ Healthcare only: 20 µg/m ³	Particulate monitoring device with accuracy greater of 5 micrograms/m ³ or 20% of reading and resolution (5 min average data) +/- 5 µg/m ³
PM 2.5	12 µg/m ³ or 35 µg/m ³ **	
Ozone	0.07 ppm	Monitoring device with accuracy greater of 5 ppb or 20% of reading and resolution (5 min

		average data) +/- 5 ppb ISO 13964 ASTM D5149 — 02 EPA designated methods for Ozone
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Perform a screening test for Total Volatile Organic Compounds (TVOC). Use ISO 16000-6, EPA TO-17, or EPA TO-15 to collect and analyze the air sample. Calculate the TVOC value per EN 16516:2017, CDPH Standard Method v1.2 2017 section 3.9.4, or alternative calculation method as long as full method description is included in test report. If the TVOC levels exceed 500 µg/m³, investigate for potential issues by comparing the individual VOC levels from the GC/MS results to associated cognizant authority health-based limits. Correct any identified issues and re-test if necessary.

Additionally, test for the individual volatile organic compounds listed in Table 2 using an allowed test method and demonstrate the contaminants do not exceed the concentration limits listed in the table.

Table 2.

Contaminant (CAS#)	Concentration Limit (µg/m ³)	Allowed Test Methods
Formaldehyde 50-00-0	20 µg/m ³ (16 ppb)	ISO 16000-3, 4; EPA TO-11a, EPA comp. IP-6A ASTM D5197-16
Acetaldehyde 75-07-0	140 µg/m ³	
Benzene 71-43-2	3 µg/m ³	ISO 16000-6 EPA IP-1, EPA TO-17, EPA TO-15 ISO 16017-1, 2; ASTM D6196-15
Hexane (n-) 110-54-3	7000 µg/m ³	
Naphthalene 91-20-3	9 µg/m ³	
Phenol 108-95-2	200 µg/m ³	
Styrene 100-42-5	900 µg/m ³	
Tetrachloroethylene 127-18-4	35 µg/m ³	
Toluene 108-88-3	300 µg/m ³	
Vinyl acetate 108-05-4	200 µg/m ³	
Dichlorobenzene (1,4-) 106-46-7	800 µg/m ³	
Xylenes-total 108-38-3, 95-47-6, and 106-42-3	700 µg/m ³	

3.5 COMMISSOINING

- A. EA prerequisite and EA credit: Comply with Division 1 Section "General Commissioning Requirements"

LEED SCORECARD – follows

LEED SUBMITTAL COVER SHEET – follows

LEED MONTHLY REPORT TEMPLATE – follows

END OF SECTION 018113



LEED v4.1 BD+C

Project Checklist - New Construction

Project Name: Saco Joint Vehicle Maintenance Facility

Prepared By: Maine Army National Guard

Facilities Project Manager: Ralph F. Turner, PE

Date: 21 April 2022

Y	?	N			
		1	Credit	Integrative Process (Health Care Only)	1

1	2	13	Location and Transportation		16
			Credit	LEED for Neighborhood Development Location	16
	1		Credit	Sensitive Land Protection	1
	1	1	Credit	High Priority Site and Equitable Development	2
		5	Credit	Surrounding Density and Diverse Uses	5
		5	Credit	Access to Quality Transit	5
		1	Credit	Bicycle Facilities	1
		1	Credit	Reduced Parking Footprint	1
1			Credit	Electric Vehicles	1

6	1	3	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
1	1		Credit	Protect or Restore Habitat	2
		1	Credit	Open Space	1
3			Credit	Rainwater Management	3
		2	Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

8	0	3	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
5		1	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

14	5	14	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
6			Credit	Enhanced Commissioning	6
5		13	Credit	Optimize Energy Performance	18
1			Credit	Advanced Energy Metering	1
	2		Credit	Demand Response	2
	3		Credit	Renewable Energy	5
1			Credit	Enhanced Refrigerant Management	1
1		1	Credit	Green Power and Carbon Offsets	1

8	2	3	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
3		2	Credit	Building Life-Cycle Impact Reduction	5
1		1	Credit	Environmental Product Declarations	2
1	1		Credit	Sourcing of Raw Materials	2
1	1		Credit	Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

8	3	5	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1		1	Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1	1		Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
		3	Credit	Daylight	3
		1	Credit	Quality Views	1
	1		Credit	Acoustic Performance	1

5	0	1	Innovation		6
5			Credit	Innovation	5
		1	Credit	LEED Accredited Professional	1

1	5	0	Regional Priority		6
	1		Credit	Regional Priority: Site Development Protect and Restore	1
	1		Credit	Regional Priority: Building Life Cycle Reduction	1
	1		Credit	Regional Priority: Optimize Energy Performance	1
1			Credit	Regional Priority: Thermal Comfort	1
	1		Credit	Regional Priority: Sensitive Land Protection	1
	1		Credit	Regional Priority: Rainwater Management	1










51	18	43	TOTALS		Possible Points: 112
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to					

PRODUCT DATA REPORTING FORM for LEED v4 Projects

THIS FORM IS REQUIRED TO BE SUBMITTED WITH Product Data Submittals

You must include backup documentation such as SPECIFIC Product Data Sheets, Cut Sheets, Product Specific Letter from Manufacturer, etc. **DO NOT INCLUDE GENERIC MARKETING MATERIAL**

LEED PROJECT NAME: _____
 SUBCONTRACTOR: _____
 Specification Section: _____ Submittal Number: _____

Project Product Data			Materials and Resources LEED Credits										Low-Emitting Materials LEED Credits (See note 13)			
Product	Manufacturer	Product Costs ¹ (only exclude install labor) (\$)	 Product Specific (PS) or Industry Wide (IW) Env. Product Declaration (EPD) ³ ?	 FSC Certified ⁷ Wood Products? (%)	 Post-Consumer Recycled Content ⁸ (%)	 Pre-Consumer Recycled Content ⁹ (%)	 Extended Producer Responsibility ⁵ Program Name?	 Declare Label with ingredient disclosure greater than 1000 ppm?	 Fully Declared HPD to 1000 ppm Declaration ⁴ included?	 C2C version (2.1.1 or 3.0) Level of Certification	ONLY if product has FSC or recycled content, then fill Regional Data	 Extracted, Manufactured, & Purchased within ² 100 miles?	CDPH Emissions ¹⁰ testing compliant?	VOC Content ¹¹ (g/L)	Wet-Applied Products Volume Used (L)	Wood Products are low emitting ¹² ?
Ex. ABC Product	ABC, Inc.	\$ XX,XXX	PS / IW	%	%	%	Yes / No	Yes / No	Yes / No	Yes / No		Yes / No	##	##	Yes / No	
1																
2																
3																
4																
5																
6																
7																
8																
9																

NOTES / DEFINITIONS:

- Furnish Costs include all expenses to deliver the material to the project site, including taxes, transport, fabrication and profit. Do not include site labor or installation.
- Within 100 miles distance is defined as travel by air to the project site, not travel distance by road. <http://www.distancefromto.net/>
- Environmental Product Declarations which conform to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and have at least a cradle to gate scope. <http://productguide.ulenvironment.com/QuickSearch.aspx>
- The end use product has a published, complete Health Product Declaration with full disclosure of known hazards in compliance with the Health Product Declaration open Standard. [Smith Group JIR HPD Database](http://smithgroupjir.com/HPDDatabase)
- Extended producer responsibility. Products purchased from a manufacturer (producer) that participates in an extended producer responsibility program or is directly responsible for extended producer responsibility. (e.g. Closed Loop or Take Back Program)
- Wood products must be certified by the Forest Stewardship Council (FSC) and must provide proof of vendor FSC Chain-of-Custody with this Product Data Submittal. <http://info.fsc.org/certificate.php> Invoices listing COC numbers are required.
- Post-Consumer Recycled Content: Sourced from recovered Consumer Waste and used as a raw material (e.g. plastic bottles, newspaper, etc).
- Pre-Consumer Recycled Content: Recovered Industrial Materials diverted from municipal solid waste for use in a different mfg. process, prior to use by a consumer. Note: "home scrap" from the original mfg. process that are reused / reprocessed do not qualify.
- TVOC Emissions for Building products must be tested and determined compliant in accordance with California Department of Public Health (CDPH) Standard Method v1.2–2017 <http://www.usgbc.org/resources/low-emitting-materials-third-party-certification-table>
- All paints and coatings wet-applied on site must meet applicable VOC limits of the California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or the South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011. All adhesives and sealants wet-applied on site must meet the applicable chemical content requirements of SCAQMD Rule 1168, October 6, 2017, Adhesive and Sealant Applications, as analyzed by the methods specified in Rule 1168.
- Composite Wood Evaluation as defined by the California Air Resources Board (CARB), Airborne Toxic Measure to Reduce Formaldehyde Emissions from Composite Wood Products Regulation, must be documented to have low formaldehyde emissions that meet the CARB ATCM for formaldehyde requirements for ultra-low-emitting formaldehyde (ULEF) resins or no added formaldehyde (NAUF) resins. In additional structural composite wood shall meet requirements listed in specifications.
- CDPH (California Department of Public Health (CDPH) Standard Method v1.2–2017) is required for each of the following product categories at the following thresholds: Interior Paints & Coatings (75% by volume); Interior Adhesives & Sealants (75% by volume); Flooring (90% by area); Insulation (75% by value); Ceilings (90% by area); and Composite Wood (75% by value or area.)

I, _____ a duly authorized representative of _____ hereby certify that the material information submitted here is an accurate representation of the material to be provided under our contract.

EMAIL CONTACT FOR AUTHORIZED REPRESENTATIVE: _____ Direct Phone: _____
 SIGNATURE OF AUTHORIZED REPRESENTATIVE: _____ DATE: _____

PROJECT
NAME

DATE

FROM

COMPANY

Instruction to Contractor: The following worksheet shall be completed by the end of each pay cycle. Attach updated LEED calculators to the report.

Construction Activity Pollution Prevention (Prerequisite)

1. Two date-stamped photos showing ESC measure provided? (Attach to report)

Check: Yes In Progress

Narrative description of activities this cycle:

Construction & Demolition Waste Management Planning (Prerequisite)
Construction & Demolition Waste Management

1. Construction Waste Management Plan provided?

Check: Yes In Progress

Narrative description of activities this cycle:

2. Enter total waste diversion from the CWM LEED Calculator: _____

3. Enter the number of waste streams being tracked: _____

4. Construction and Demolition Waste Management Calculator to be attached.

Date of last load included: _____

Comments:

Building Product Disclosure and Optimization (General)

1. Total Construction Cost reported in the BPDO Calculator: _____
2. Attach BPDO Calculator to report

Number of items included: _____

Building Product Disclosure and Optimization, EPDs

1. Enter the weighted number of EPDs from the summary tab of the BPDO calculator:

(Maintain all backup documentation in a consolidated folder in the submittal management software. File names should align with Product name on BPDO calculator followed by EPD, example : "Armstrong_Optima_Tile-EPD.pdf")

Building Product Disclosure and Optimization, Material Ingredients

1. Enter the weighted number of Material Inventories from the summary tab of the BPDO calculator:

(Maintain all backup documentation in a consolidated folder in the submittal management software. File names should align with Product name on BPDO calculator followed by HPD, example : "Shaw_Broadloom_Carpet-HPD.pdf")

Building Product Disclosure and Optimization, Sourcing of Raw Materials

1. Enter the sustainable criteria value as a percentage of total materials cost from the summary tab of the BPDO calculator:

(Maintain all backup documentation in a consolidated folder in the submittal management software. File names should align with Product name on BPDO calculator followed by FSC or RC, example : "Columbia_Cedar_Floor_FSC.pdf")

Low-Emitting Materials

1. Low Emitting Materials Calculator attached to report?

Check: Yes No

Comments:

2. All product categories targeted meet thresholds? (See "Summary – Option 1" tab)

Adhesives & Sealants

% Compliant with VOC Content _____
% Compliant with General emissions evaluation _____

Paints & Coatings

% Compliant with VOC Content _____
% Compliant with General emissions evaluation _____

Flooring

% Compliant with General emissions evaluation _____

Composite Wood

% Compliant with emissions evaluation _____

Ceilings

% Compliant with emissions evaluation _____

Insulation

% Compliant with emissions evaluation _____

Construction IAQ Management Plan

1. Construction IAQ Management Plan provided?

Check: Yes In Progress

Narrative Description of activities this cycle:

2. Two date-stamped photos showing IAQ measure provided? (Attach to report)

Check: Yes In Progress

Comments: