SUSTAINABILITY REPORT

Project General Description

Mescalero Service Unit (MSU) provides comprehensive primary care health service to the American Indians who reside in the Community. Clinical specialties include Outpatient and Inpatient Care, Dentistry, Optometry, Radiology, Laboratory, Women's Health Clinic, Diabetic Clinic, Behavioral Health and Pain Clinic.

Rock Gap Engineering, LLC (Rock Gap) teaming with Indigenous Design Studio + Architecture (IDS+A) was awarded the project to design, provide construction documents and for the renovation and expansion of the Mescalero Service Unit in Mescalero, New Mexico. The project is approximately 11,740 Building Gross Square Feet (BGSF) of existing, new Patient Care, Support, New Laboratory, and an improved and expanded Pharmacy. The project will convert 570 square feet to an IT Server Room, IT Training and Office; renovate and dedicate space to Bio-Med and improve a toilet/changing room located in the X-Ray Department to be ADA compliant. The renovation project will reuse the existing HVAC equipment in the existing building and install new equipment to serve the expansion. Packaged equipment will be used for all new applications. Unique to this project is the incorporation between existing and new architectural features to the front exterior elevation and canopies as recommended by the Historic Preservation consulting report.

1. INTEGRATED DESIGN PRINCIPLES - General Description

In this project integrated design principles were followed to inform the building design. Structural engineering, mechanical and electrical engineering worked together with the architect to work on the design to give the best results for the design of the addition and renovation. The team utilized a participatory process including the end users to develop the program and ensure the project will fulfil their needs and the patient needs. The design team also utilized Building information management to check the design during the process. Products selected for the project meet sustainable requirements for LEED and Well building. The manufacturing process for the product is considered, as well as maintenance and longevity. Where materials as wall protection and corner guards are installed maintenance costs are less.

2. ENHANCED INDOOR ENVIRONMENTAL QUALITY

Materials are selected for many sustainable qualities such as Low-VOC Emissions, recycled content while maintaining high durability. This is not a LEED project, it is common sense to use these types of materials that contribute to the building environment and health of the occupants. Use of manufacturers that are committed to sustainability are specified especially when renewable and recycled materials are used in the manufacturing process. Components in doors such as Graham/Maiman wood doors use agrifiber cores and environmentally safe adhesives. Seamless homogeneous vinyl flooring in the laboratory which is long lasting easily maintained and reduce maintenance costs over the floors life span. Corian solid surface material, is a durable material for countertop and preferred because it is easy to maintain, stain and chemical resistant, has recycled content, LEED certified and long lasting. Suspended ceiling tiles that are produced without formaldehyde, include a high ratio of recycled content and produced with bio based materials. Ceiling tiles will be high performance in regards to light reflectance, anti-mold/mildew, acoustic properties and durability.

Sherwin William's interior paint is specified and meets requirements for low or zero VOCs Emissions as well as a number of Green programs specifications such as LEED, Green Globes and the National Green Building Standard.

The renovation of the existing space is planned in phases:

1) Construction begins
   - 1a) Addition. The existing facility will be protected with the existing wall as a barrier until the addition is completed. All access to existing utilities will be scheduled and coordinated.
   - 1b) IT Server Room- relocate office function
2) Pharmacy will vacate their space and move into a temporary location while the department is in construction.
3) Addition Construction complete:
   - 3a) IT Server is up and running
   - 3b) Primary Care and Laboratory move into the new space
3) Remainder of Renovation
   a. Existing Lab demolition and renovation into IT Training and IT office.
   b. X-Ray will move into a temporary location and provide limited services with portable equipment until renovation is complete.
4) During all construction phases / activities interior and exterior, a protective barrier will be constructed to protect patients and staff. Protection of IAQ during

construction activities is critical due to the high risk of infection for patients. During prolonged construction activity, Infection Control Risk Assessment requires a solid barrier between the construction work zone and occupied zone during construction.

3. REDUCED ENVIRONMENTAL IMPACT OF MATERIALS

Building materials including steel stud framing and suspended ceiling systems have recycled steel content of approximately 25%. The manufacturing process of Gypsum board includes materials include corn and wheat starches and the recapture of by products such as fly ash that would otherwise go to a landfill. Unbleached newspaper & magazines are recycled into gypsum board face paper. Graham/Maiman thermally fused solid core doors can be provided with an optional agrifiber core of wheat stalks however would not be feasible unless was critical to achieving LEED certification. InPro offers an optional Impact Resistant Wall Protection - G2 Corn-Based BioBlend Non-PVC reformulated PETG manufactured using a biopolymer blend, contains up to 20% pre-consumer recycled content and rapidly renewable biopolymer, and complies with Greenguard's chemical emissions standards.

Any material containers are recyclable. Carefully planned layout of flooring sheet goods will leave little waste materials (e.g. from cutting & trimming) from the flooring installation. Gypsum board installation waste from cutting & trimming (5-15%) has the potential to be recycled as post-consumer waste or as a soil stabilizer with a local source.

The insulated metal panels accomplish a few critical items for construction. The panels are a complete exterior wall system (including insulation) reducing the labor and cost needed to construct the exterior shell. The process of making building materials puts carbon in the air, manufacturing the insulated metal panel has less embodied carbon when compared to traditional wall systems, thereby reducing greenhouse gases. The impact of this type of material also has an effect on building operation with an R-value of 20. Lowering the impact and cost of using non-renewable energy sources.

4. SUPPLEMENTAL SUSTAINABILITY MEASURES

Sound Control is important in a healthcare setting. Noise can be stressful, exhausting and cause errors. Speech privacy is important as well as the ability to understand what is being said. Acoustic properties of materials are important for patient privacy and sound transmission, especially within patient treatment areas and patient

registration. One of the most effective and easiest method of lowering the reverberation of sound is using a sound absorbing ceiling tile. We propose a product such as Armstrong ceiling panels which have an NRC value of 0.60, and CAC value of 35. Ceiling tile panels will be durable and long lasting. When a tile is worn or damaged is must be replaced. If a tile is painted it loses the acoustic properties.

5. OPTIMIZED ENERGY PERFORMANCE

The project scope did not include the entirety of the Service Unit and moderate modifications to the existing spaces were prescriptive. The exterior envelope modifications are outlined in the scope of work and upgrades to existing hospital utilities or infrastructures are not included.

The A/E design guide identifies minimum energy efficiency improvements based on ASHRAE 90.1 baselines. As the building was constructed in the late 1960s, the envelope is not compliant with minimum prescriptive elements from ASHRAE 90.1 and is not included in the project scope for upgrade. Also, the renovation project will reuse the existing HVAC equipment in the existing building, and install new equipment to serve the expansion.

The new HVAC units will involve new cooling and heat generating equipment and therefore can be evaluated in regard to efficiency gains over 90.1 baseline efficiencies. Packaged equipment will be used for all new applications. The lighting being installed in the renovated and expanded areas can be evaluated for efficiency gains over the baseline as well. Comparisons will be made on an energy cost basis outlined in ASHRAE 90.1, Appendix G. The results of this analysis will be included in the project sustainability report as an appendix.

6. WATER CONSERVATION - General Description

Water conservation measures will be applied in the renovated and expanded areas but sustainability goals will be limited. The A/E design guide identifies a 20% reduction in water usage compared to EPA 1992 standards. The water usage fixtures in the Lab and Primary Care suites are typically defined by a minimum water use for effective function. As such, water reduction is not possible at several fixtures. The exam room sink, soiled utility faucets and Lab clinical sinks are examples of fixtures where water use reduction is not possible while maintaining acceptable service to the end users. On the other hand, the lavatories and water closets in the patient and staff toilet rooms are places where water efficient fixtures can be installed. The process water usage was not evaluated for water use reduction, as they were uses which were dictated by health or safety needs and could not be reduced.

Water use reduction has been tabulated for the spaces as shown below:

Summary for New Construction, Core and Shell, Schools, and Commercial Interiors

Note: Baseline and design volumes are READ-ONLY. To edit, see the previous tab(s).

Refresh Groups

Group Name	Baseline Case (gallons/year)			Design Case (gallons/year)		
	Annual Flush Volume	Annual Flow Volume	Annual Consumption	Annual Flush Volume	Annual Flow Volume	Annual Consumption
Expansion	80,300.00	12,548.70	92,848.70	64,240.00	12,546.88	76,786.88
Existing Spaces	39,420.00	6,161.20	45,581.20	31,536.00	6,159.38	37,695.38

Annual baseline water consumption (gallons/year)	138,429.90
Annual design water consumption (gallons/year)	114,482.26
Percent water use reduction (%)	**17.30%**

For projects with on-site nonpotable water use

To claim savings from on-site nonpotable water use, provide additional documentation in the LEED credit form, including plumbing drawings and supply and demand calculations, to confirm the available quantity of on-site nonpotable water. Ensure that the documentation addresses any issues of seasonal availability and on-site storage capacity.

Annual quantity of on-site nonpotable water use (gallons/year)	
Adjusted annual water use consumption (gallons/year)	114,482.26
Percent water use reduction, adjusted for on-site nonpotable water use (%)	**17.30%**

7. ENHANCED INDOOR ENVIRONMENTAL QUALITY - General Description

The HVAC System ventilation rates are based on ASHRAE 170. The spaces within the expanded or new areas fall within in the spaces identified in Standard 170 and ventilation and overall flow rates come from the standard. Thermostat set-point default values are set to values identified in ASHRAE 55 in non-healthcare spaces. Standard 170 identifies specific temperature limits, and is used for clinical spaces for temperature set points as well.

8. SUPPLEMENTAL SUSTAINABILITY MEASURES - Building Control Systems

The mechanical HVAC equipment being installed on the project will be tied into the existing building automation system. The facilities maintenance staff has identified a

specific vendor of controls and automation systems to provide equipment and services to the hospital. The controls specifications have been modified to reflect this vendor.

Full digital controls are being designed for the HVAC system. As most of the equipment installed on the project consists of pre-packaged units, the controls and monitoring will be limited to start/stop scheduling and monitoring of conditions outside of the unit enclosures. Factory controls for all HVAC equipment will be relied on for safeties and interlocks, and further control logic will be used to direct suppliers and installers on how the equipment is intended to operate.

Appendices

A. HVAC Equipment Efficiency Calculations

B. Lighting Power Efficiency Calculations

C. Building Materials Sustainability Data Sheets