



Fort Peck
Wellness
Center

Assiniboine
& Sioux
Tribes of the
Fort Peck
Indian
Reservation



Office of Indian Energy Annual Program Review Sheraton Denver West Hotel Denver Colorado

Assiniboine & Sioux Tribes of
the Fort Peck Indian Reservation
Fort Peck Wellness Center
Energy Project
Poplar, Montana



Fort Peck Indian Reservation

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- # NE Montana
- # 2.1 Million Acres
- # Checkerboard Land Pattern

- # Assiniboine & Sioux
- # 11,000 members
- # 6700 live on
Reservation





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Fort Peck Wellness Center

- # Multi disciplinary Wellness/Activity Center
- # Initiated in 2012 by Health Promotion Disease Prevention Program
- # Established CAT (Construction Advisory Team) in October 2018, intertribal, multidisciplinary





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CAT Team

- # Planning Office – 2 Representatives
- # Tribes' Secretary Accountant
- # Environmental Office – 1 Rep
- # Legal Representation – 2 Reps
- # Health Prevention Staff - 6 Reps
- # Road Department – 1 Rep
- # Minerals – 1 Rep



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CAT Deliverables

- Secured Civil Engineering services
- Advertised and selected Architectural Firm
- Reviewed funding options
- Established footprint of building
- Determined appropriate amenities
- Supported Green infrastructure options including DOE Grant
- Secures Tribal Executive Board support through information sharing including public outreach



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Past Related Activities

“Model Green Tribal Community” – FPT Strategic Plan

- # Ground source heat pumps (GSHP) – Adult Correctional Facility & 8 tribal homes
- # Rehab Cultural Center for increased insulation and lighting efficiency
- # GSHP and EE lighting installed on Phase III Tribal HQs and new Community Center
- # Sustainable Village



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 HEALTH PROMOTION
DISEASE PREVENTION
FORT PECK TRIBES





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Project Objectives:

- **Objective 1:** Install 72-78 kW of roof mounted solar Photo Voltaic System by the end of the 21st month
- **Objective 2:** Reduce utility bills by approximately 23% per year through installing 8 Building Energy Efficiency Measures (EEM's) by the end of the 21st month

Baseline Assumptions, IECC 2012 compliant building:

- **Electric Usage:** Approximately 900,000 kWh per year
- **Natural Gas Usage:** 65,262 therms per year (based on package VAV system)
- **Total expected utility cost - \$108,690.00 per year**

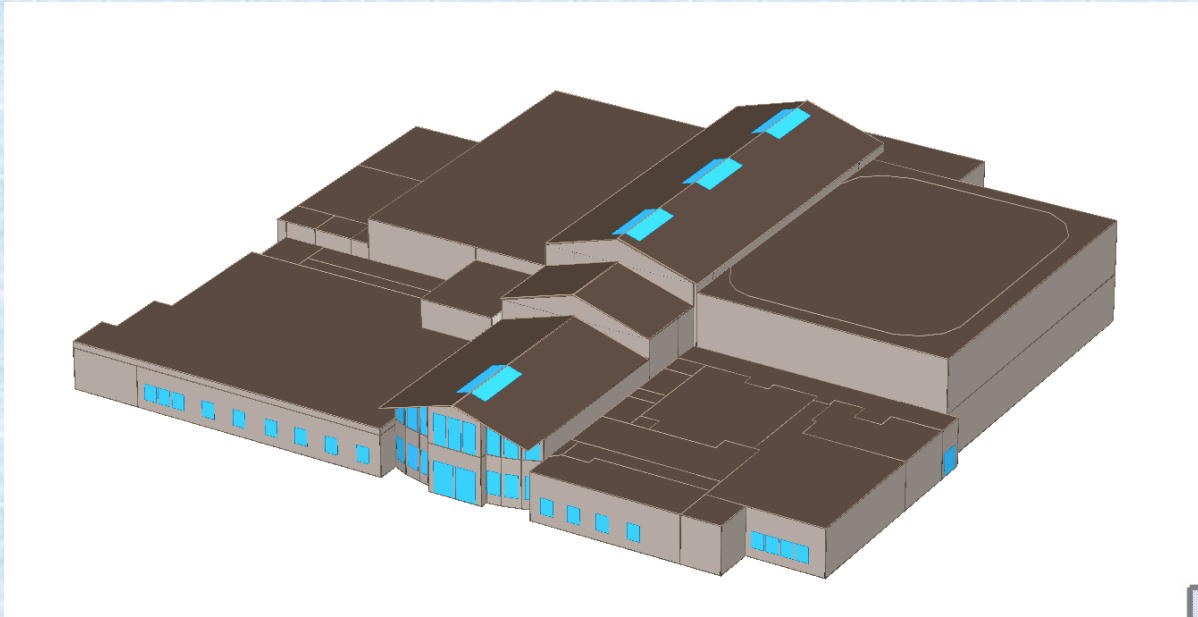
Energy Saving Expectations:

- **Solar PV Arrays – operating cost savings - \$5,991.00**
- **8 accepted building envelope, lighting, & VAV HVAC EEM's - \$25,570.00 per year**
- **Total expected utility cost savings - \$31,561.00 per year = 29% annual reduction**



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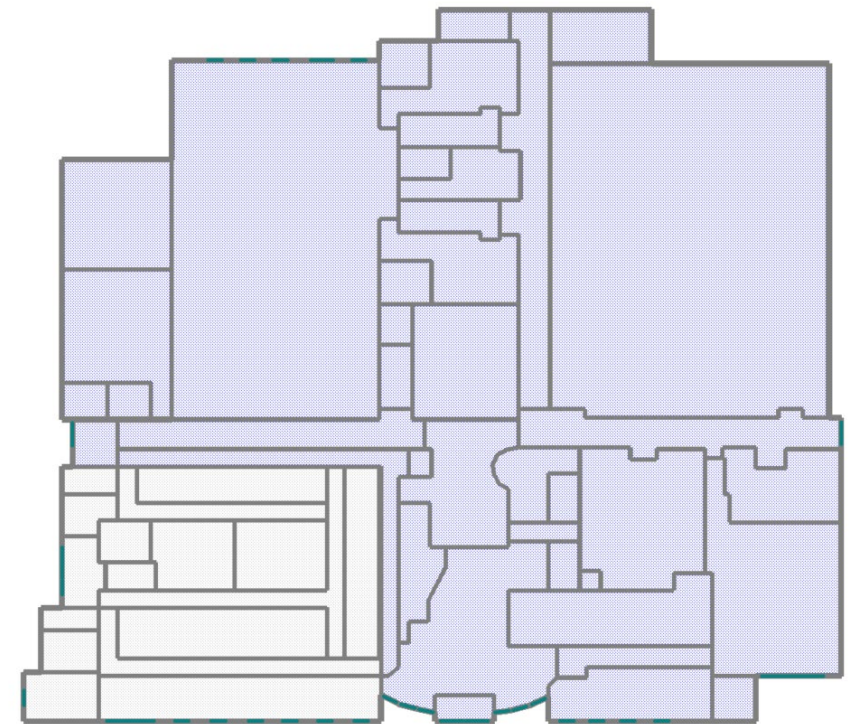
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A detailed energy Simulation model was developed using eQuest (DOE 2.2) software.

Energy Savings:

- EEM's – 15 options considered and modeled
- EEM's – 8 options selected based on payback time frames





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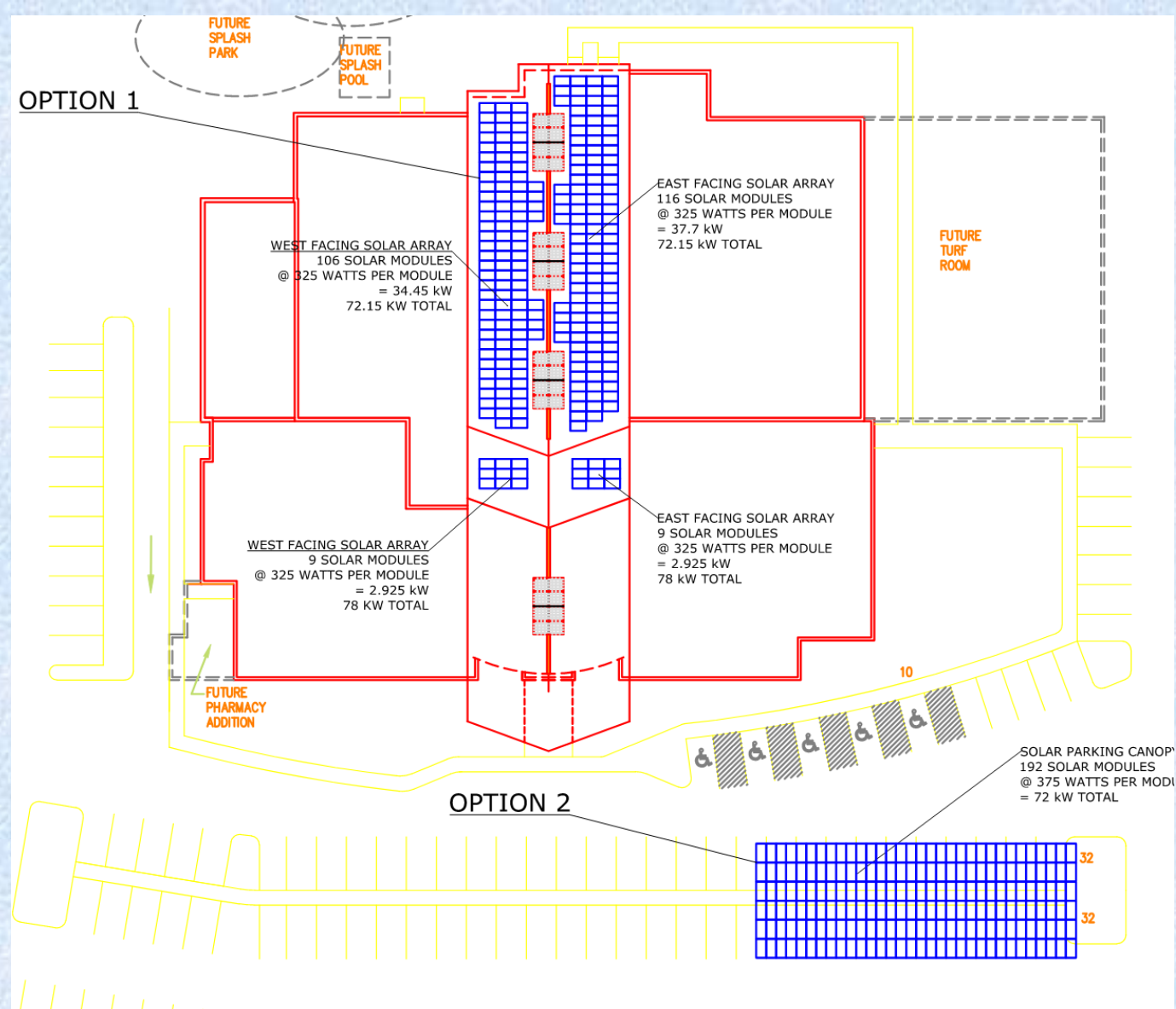


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EEM List and Energy Cost Savings Results							
Item	Energy Efficiency Measure	Details	Energy Cost Savings per year	Cost Of Item (Baseline - EEM Cost)	Payback (Years)	EEM Accepted?	Reasoning for Acceptance or rejection
Building Envelope and Lighting Components EEM Analysis							
E2	Improved Wall R value	IECC 2012 Code minimum vs. architectural wall of R-31.6	\$ 1,009.00	\$ 134,555.00	133	No	Poor payback
E4	Improved Roof R Value	IECC 2012 Code minimum vs. architectural roof of R-41.3	\$ 592.00	\$ 89,970.00	152	No	Poor payback
E8	Improved Windows	IECC 2012 Code minimum vs. triple glaze, Low E Argon Glass	\$ 362.00	\$ 10,823.00	30	Yes	Longer Payback, but helps meet comfort of occupants
E11	Improved Skylights	IECC 2012 baseline vs. High Performance U=0.16, SHG - 0.06	\$ 475.00	\$ 11,896.00	25	Yes	Fair Payback
L1	Provide High Efficiency Lighting (LED) and controls	IECC 2012 minimum vs. 0.6w/sf overall goal	\$ 9,681.00	\$ 53,466.00	6	Yes	Excellent payback
C1	Evaluate standard efficiency Geothermal Heat Pump vs standard VAV	Use standard efficiency comparison	\$ 1,353.00	\$ 100,000.00	74	No	Poor Payback
VAV System EEM Analysis							
VM1	Utilize High Efficiency DX AHU	Versus Chilled Water AHU	\$ 681.00	\$ -	-	Yes	Instant Payback
VM2	Provide High Efficiency Chiller (if VAV)	Provide High Efficiency chiller vs. code minimum	\$ 1,726.00	\$ 54,000.00	31	No	Poor payback
VM3	Provide High Efficiency Boiler (if VAV)	Use Condensing boiler vs. code minimum boiler	\$ 6,888.00	\$ 114,408.00	17	Yes	Fair Payback, Helps meet 27% efficiency Goal
VM4	Provide Energy Recovery on AHU's	Provide heat wheel energy recovery between relief and fresh air	\$ 3,155.00	\$ 88,500.00	28	No	Will consume significant floor space in addition to moderate payback
S1	Provide Transpired Solar Collector	Minimum outside air through "solar wall" type transpired solar collector	\$ 243.00	\$ 10,200.00	42	No	Poor payback
Pool Systems EEM Analysis							
VM5	Provide Pool HVAC Dehumidification Unit with heat recovery for pool heating	Use heat recovery on the Pool Dehumidification unit for pool heating. Cost includes HVAC unit upgrade and necessary piping and valves to pipe pool water to the heat recovery HX	\$ 5,838.00	\$ 10,000.00	2	Yes	Excellent payback
P1	Use High Efficiency Condensing Boiler for pool heating	Provide condensing boiler vs. 80% boiler for pool heating	\$ 759.00	\$ 16,310.00	21	Yes	Fair Payback, Helps meet 24% efficiency Goal
P2	Use Geothermal HP for pool heating vs. standard 80% boiler		\$ (328.00)	N/A	N/A	No	No payback
P3	Utilize an Electric Pool cover	Use electrically operated pool cover (Pool Consultant)	\$ 886.00	\$ 24,270.00	27	Yes	Fair Payback, will also reduce dehumidification load



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Energy Generation:

- Solar Photovoltaic Panels – Option 1 and 2
- Wind Power – Not considered due to recent system failures and significant maintenance issues



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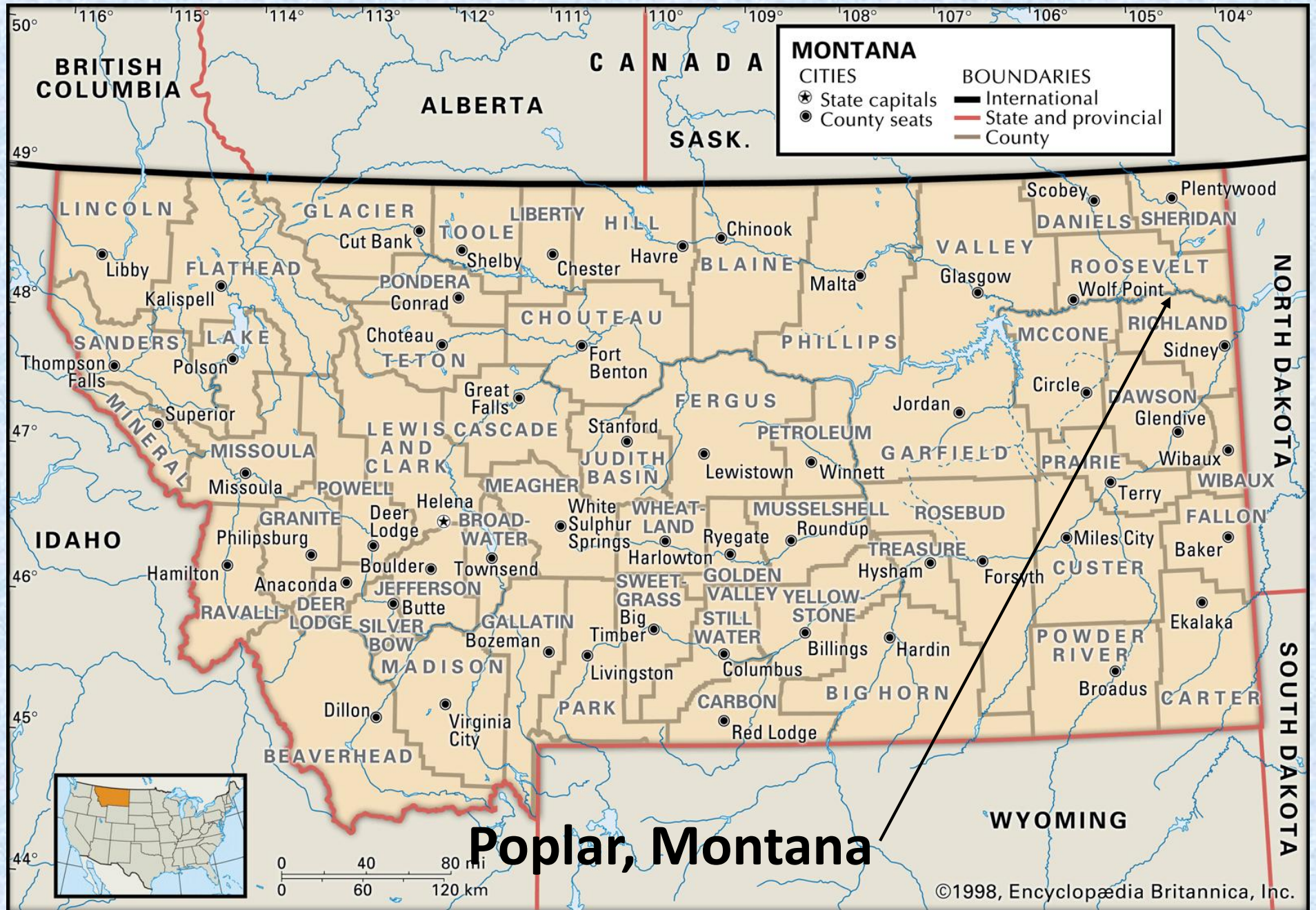
CO2 Equivalents for EEM Energy Savings Including PV Panels	
268.3	Metric Tons of CO2 equivalent
56.9	Passenger vehicles drive for 1 year
655,546	Miles Driven by an Average Passenger Vehicle
30,170	Gallons of Gasoline Consumed
293,114	Pounds of Coal burned
621	Barrels of oil consumed

Overall installing the accepted envelope, lighting, PV and VAV HVAC measures would result in energy savings of about \$31,561.00 per Year



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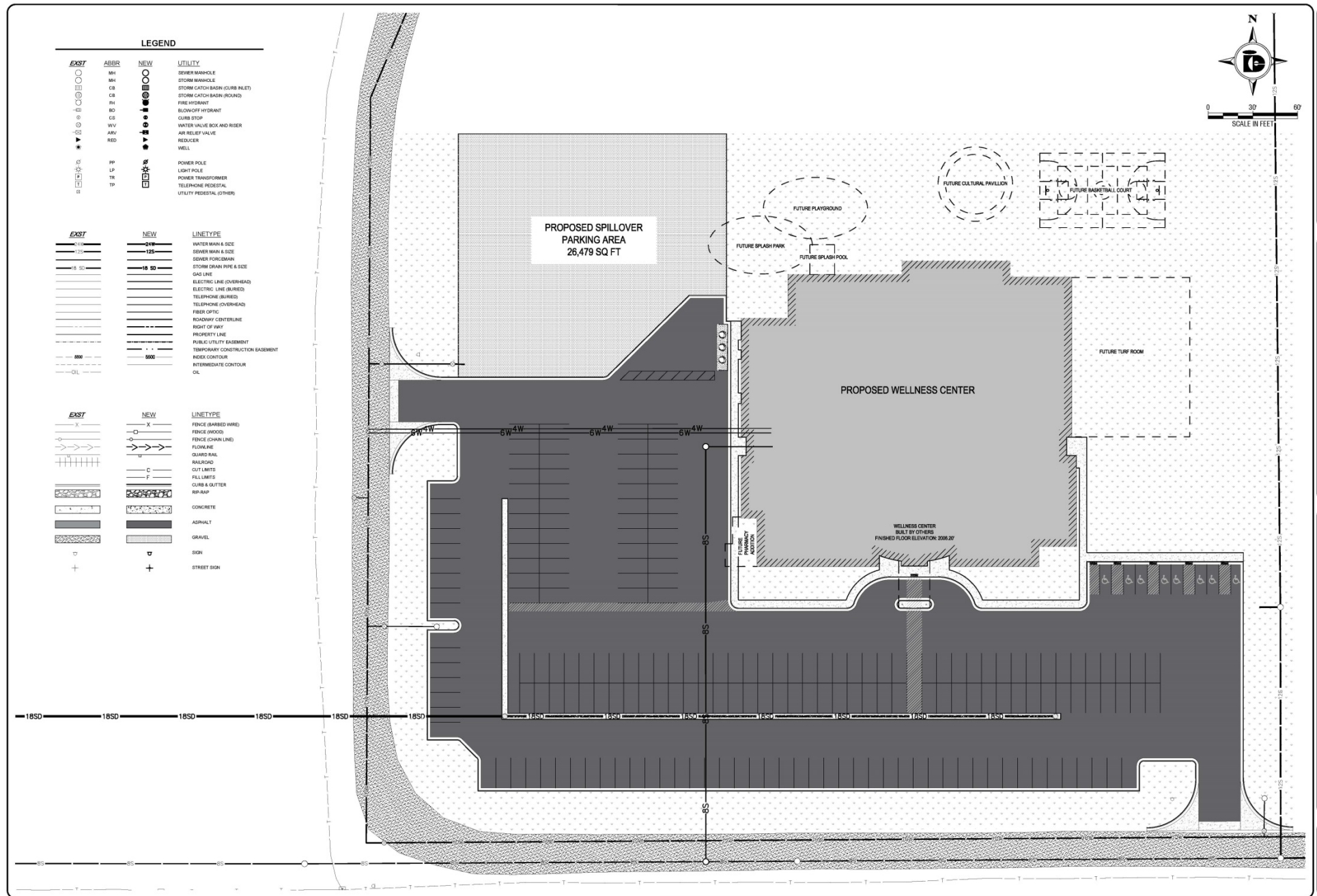
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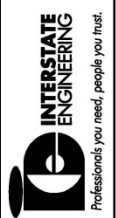


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Rev No	Date	By	Description

POPULAR WELLNESS CENTER FORT PECK ASSINIBOINE AND SIOUX TRIBES POPULAR, MT	
PROPOSED SITE	
Drawn By: TET	Checked By: RLK
Surveyed By: JOE	Designed By: TET/RLK
Project No: 571900024	Date: 10/03/19

Interstate Engineering, Inc.
 P.O. Box 648 SE
 Safford, MT 59270-0648
 Ph (406) 433-5617
 Fax (406) 433-5618
 www.interstateeng.com
Other offices in Minnesota, Iowa, Dakota and South Dakota.

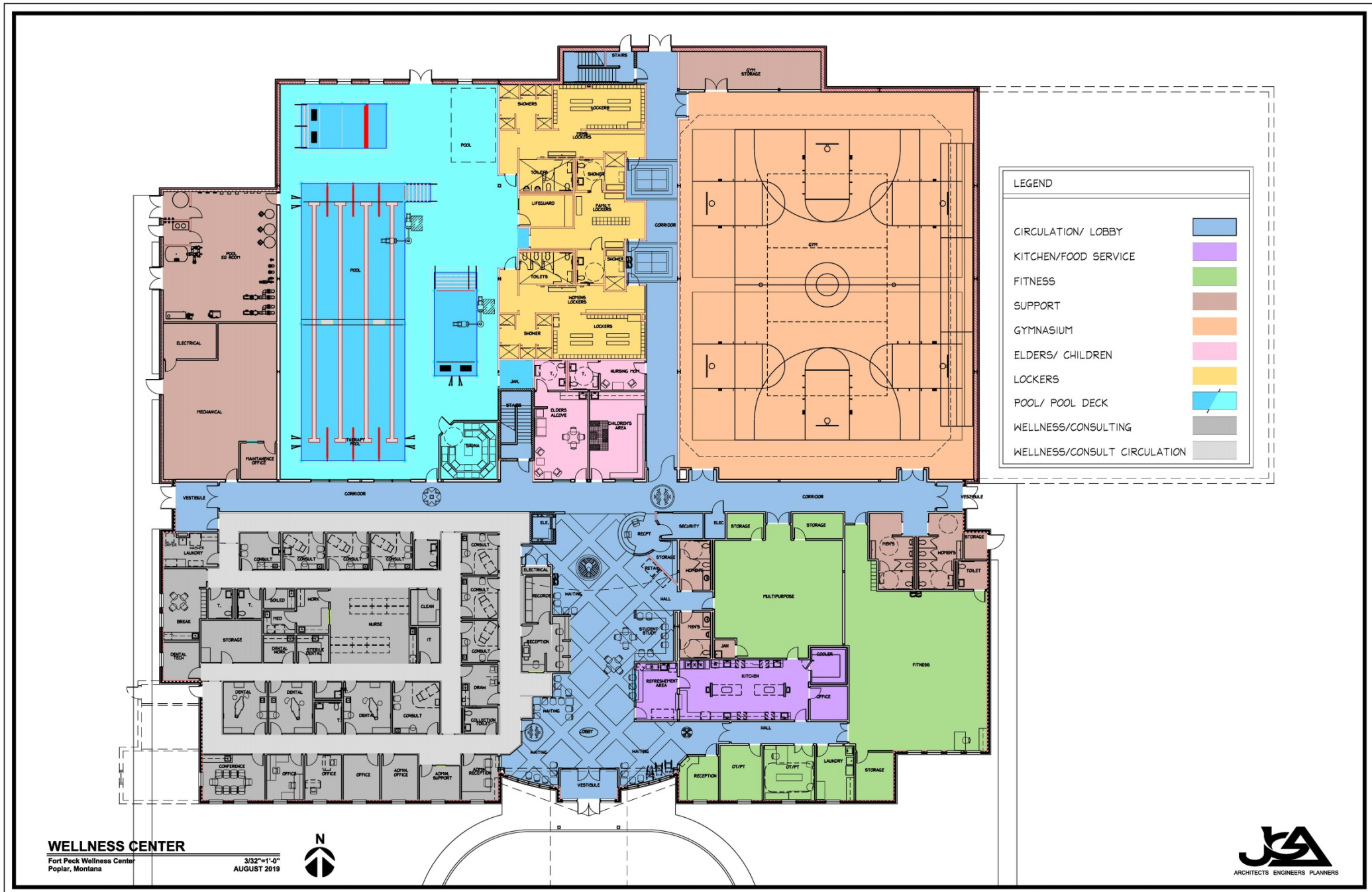




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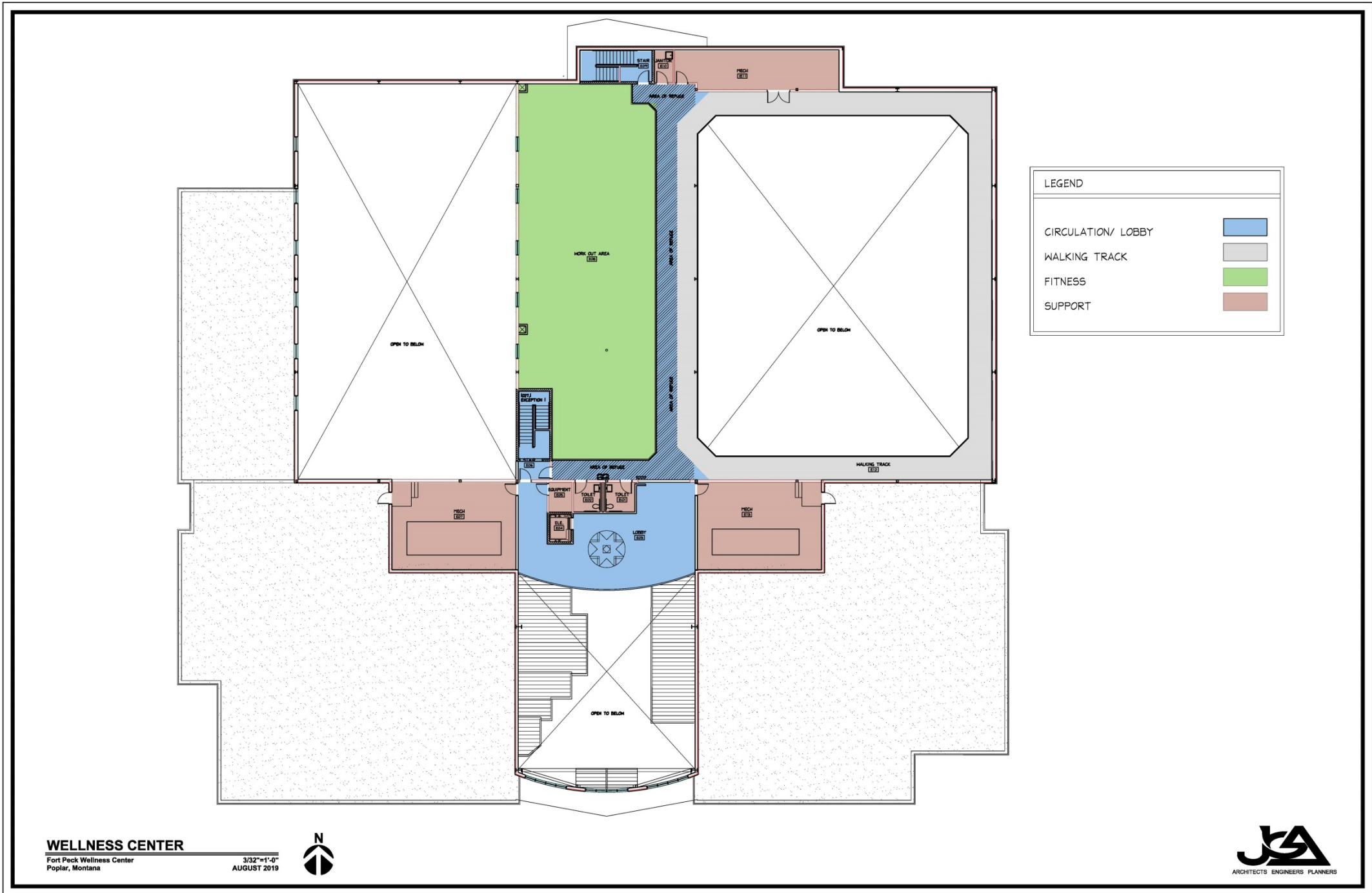
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LEGEND	
CIRCULATION/ LOBBY	
WALKING TRACK	
FITNESS	
SUPPORT	



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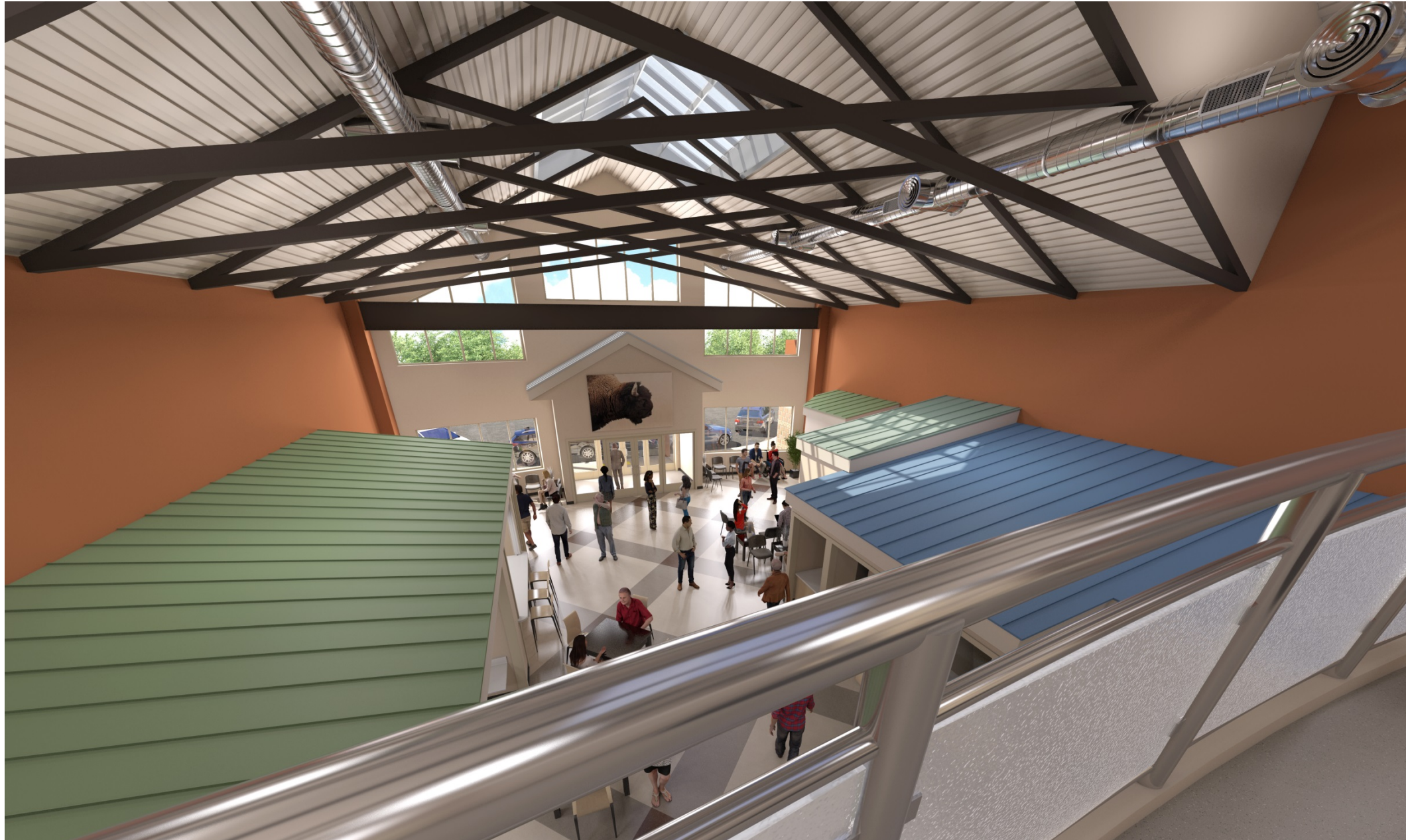
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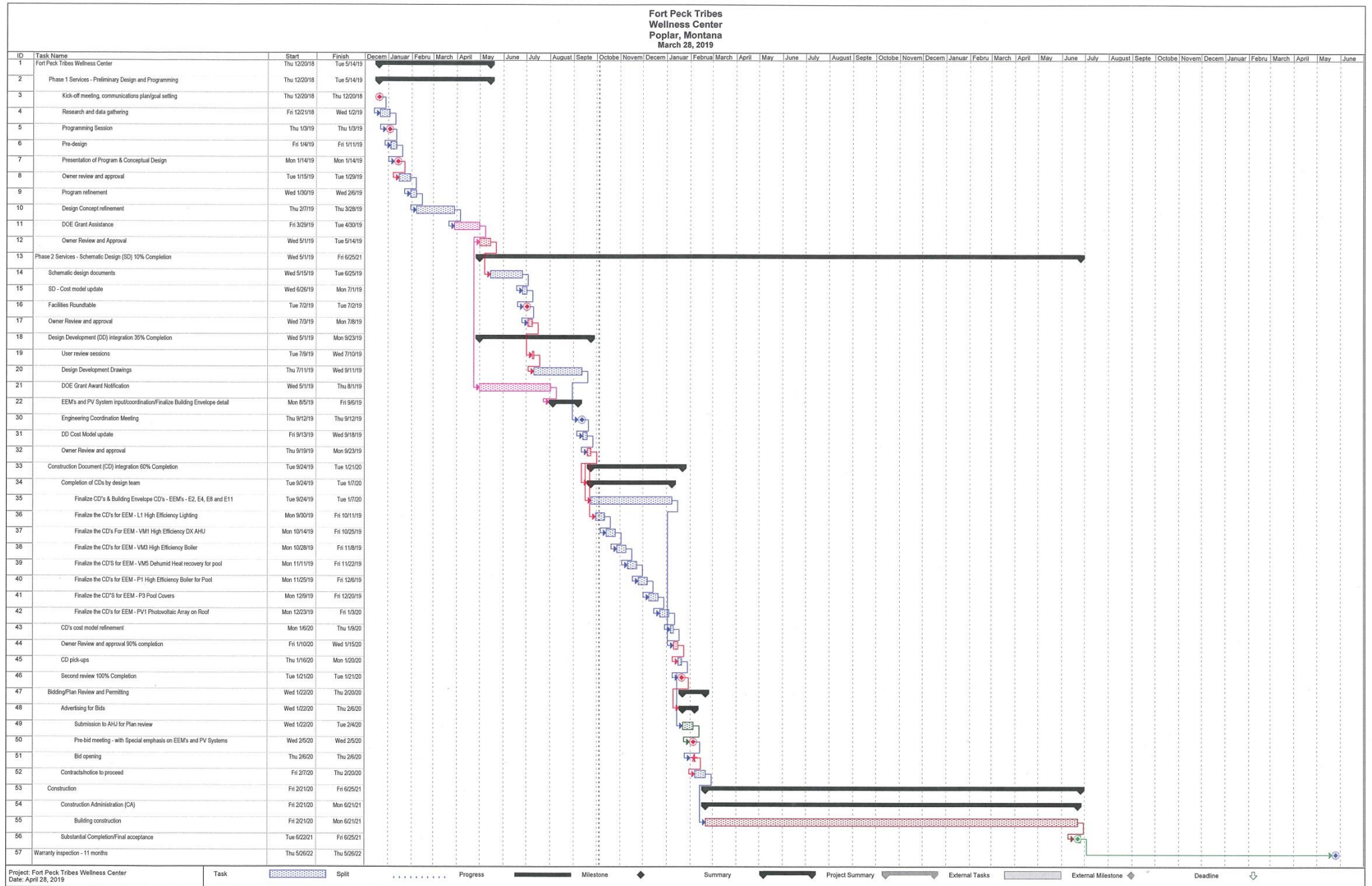


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Fort Peck Tribes Wellness Center Poplar, Montana March 28, 2019



Project: Fort Peck Tribes Wellness Center
Date: April 28, 2019

Task Split Progress Milestone Summary Project Summary External Tasks External Milestone Deadline

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QUESTIONS
& ANSWERS

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