Penobscot Nation

Indian Island, Maine

Penobscot Indian Nation
New Tribal Administration Building

Director of Facilities and Public Works –
David Pardilla

Penobscot Nation

Indian Island, Maine

Our Mission is to work in unison with the Tribal Council and our Administration to protect Penobscot People, culture and our territory by the wise exercise of our Sovereign Powers; to promote prosperity and success for all of our people through the creation of economic and cultural opportunities while always maintaining the highest level of integrity; and to preserve our cultural values entrusted to us by our ancestors in order to pass them along to our children.

PENOBSCOT NATION HISTORY

- One of the 4 Maine Wabanaki Tribes
- Currently 2,410 Tribal Members
- Tribal community located on Indian Island
- Tribal Lands throughout the State of Maine
- Total of 123,826 acres

TRIBAL DEPARTMENTS

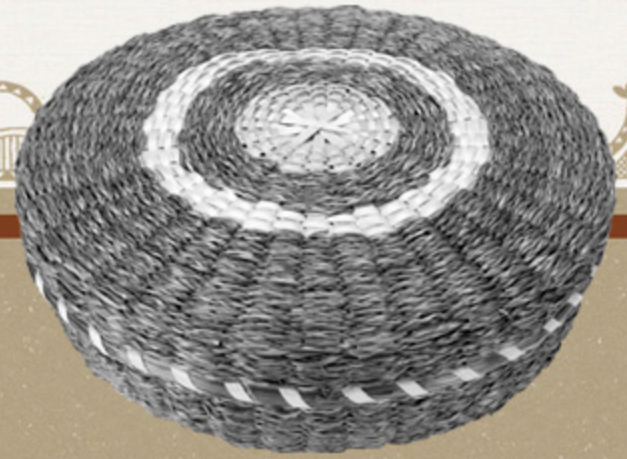
- Finance
- Legal
- Cultural & Historic Preservation
- Education & Career Development
- Economic Development
- Health Services
- Housing
- Justice-Tribal Court
- Natural Resources
- Public Safety
- Public Works
- Social Services
- Trust Services

PENOBSCOT NATION
2018

Home of the Penobscot's
"...the oldest continuous
government in the world..."

The Penobscot Nation will use funding under the DOE's Office of Indian Energy Policy and Programs to fund the installation of energy efficiency measures, and an energy generating system (Solar voltaic) in the replacement construction of its Tribal Administration Building, located on lands held in restricted fee simple lands wholly owned by the PIN and within their historic reservation boundaries.

Penobscot Nation has incorporated EEMs in the design of the new building and will place solar panels on the new building. The surplus electricity produced will be applied to additional reservation based government owned buildings' electrical usage.



*Benefits of this project are that Penobscot Nation will achieve a substantial reduction in energy draw including implementing EEMs that will further reduce draw as compared to at new building just meeting code without EEMs.

*Excess energy will be credited. Penobscot Nation expects a return of capital investment in about 8.27 years and substantial additional income to PIN over the life of the solar project assumed to be 25 years.

* The project will achieve job production through installation and maintenance of the array and reduction in climate change gasses.

Butch Phillips and Arnie Neptune

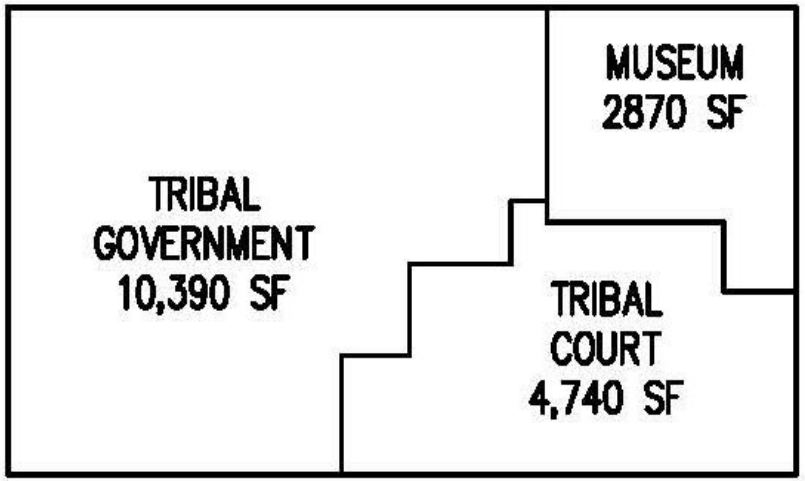
Penobscot Indian Nation
New Tribal Administration Building

Project Engineer – Ryan Keezer, P.E.

Carpenter Associates

Old Town, Maine

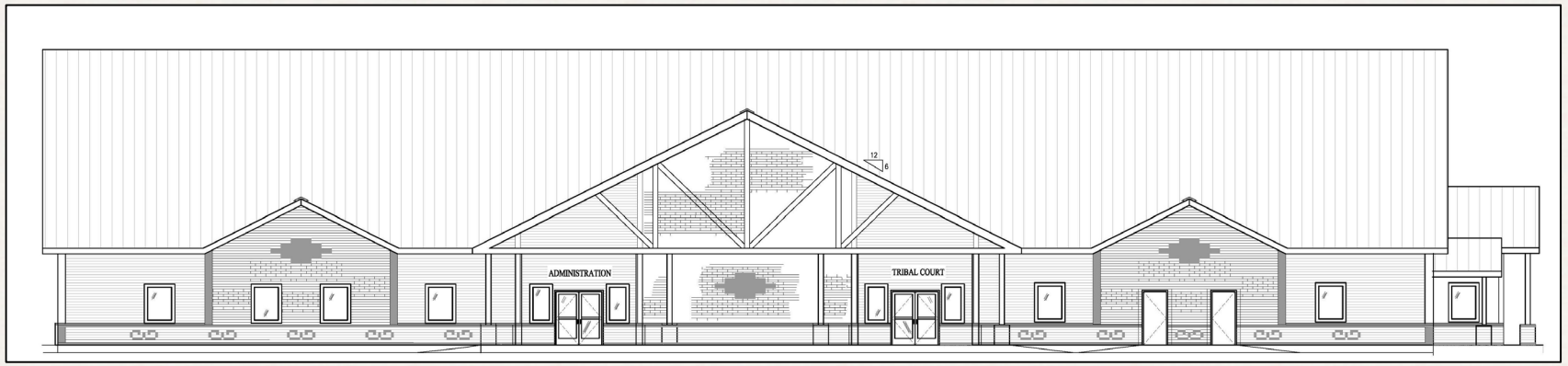
"Every mountain he got Injun in it. Katahdin, he man. Katahdin, he different. Mountain once was man."
Clara Neptune, 1916



Project Description

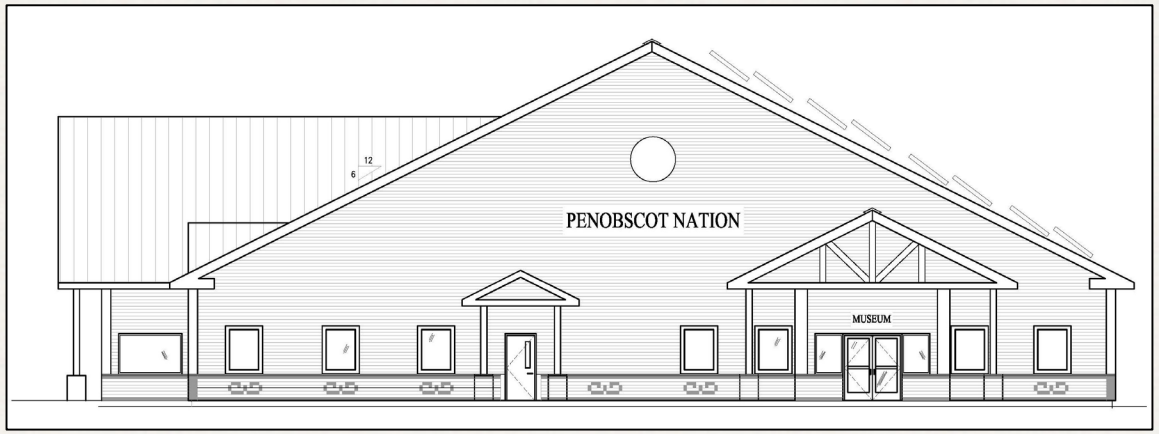
- New 18,000 Square Foot Tribal Administration Building.
- Building shall contain three distinct spaces.

Mary Ranco Spencer



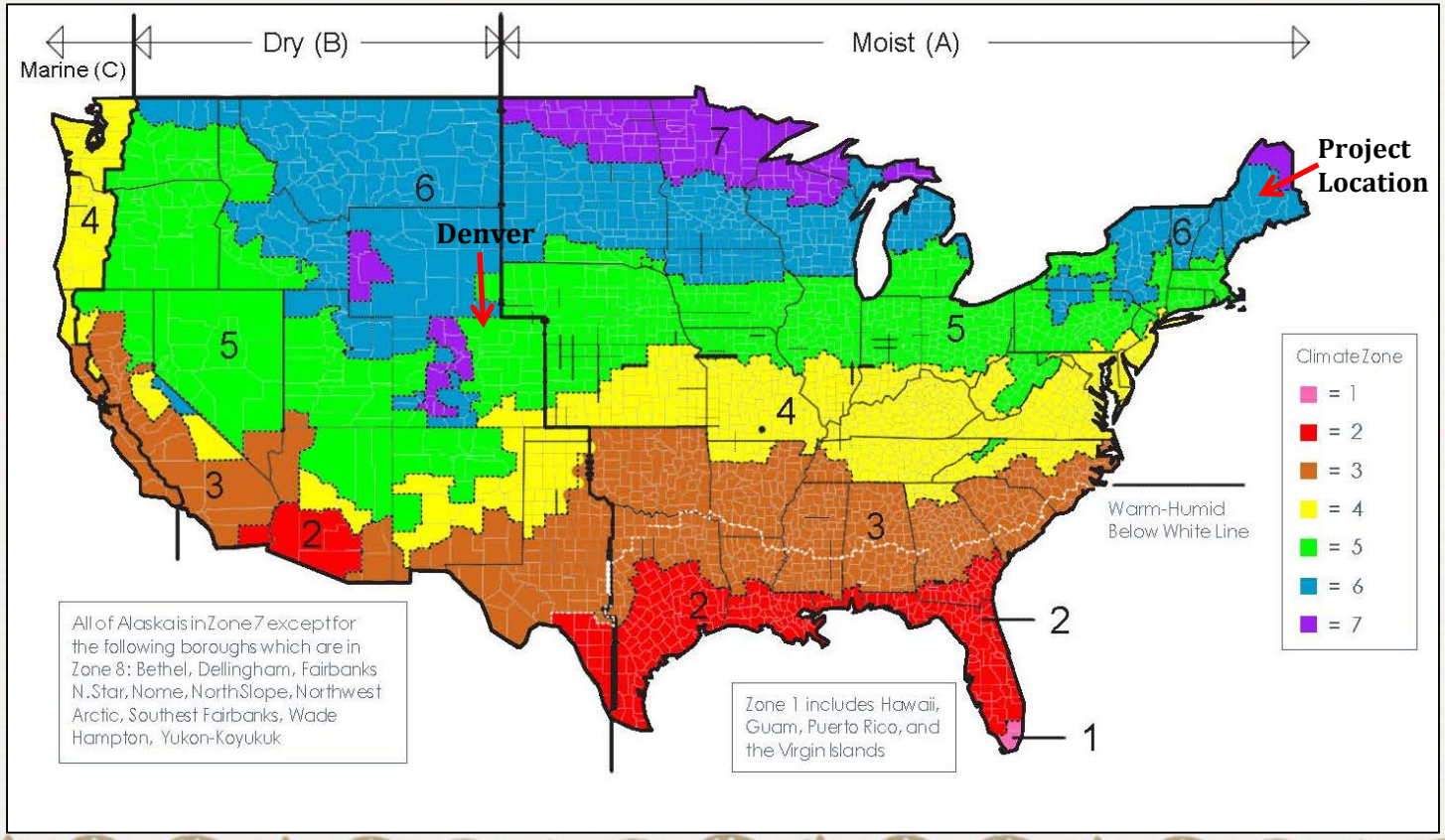
Project Goals

- Provide new wood framed Tribal Administration Building to house three separate departments.
- Project shall conform to the latest code requirements, including Energy and Ventilation Standards.
- Incorporate high efficiency equipment within all building systems and components.



Andrew Sockalexis


Penobscot Indian
Health Center
Wabanaki Way
Wabanaki Way
Wabanaki Way
Existing Building
Site



Climate Conditions

Climate Zone 6

Heating Degree Days = 7930

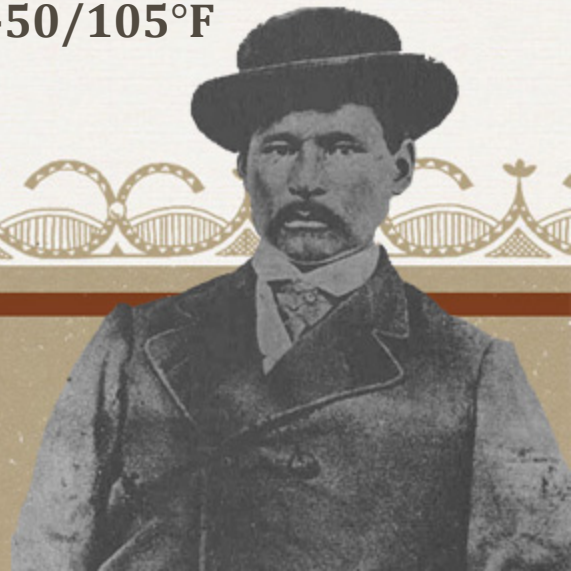
Cooling Degree Days = 1416

Heating Design Temp = -7°F

Cooling Dry Bulb = 84°F

Cooling Wet Bulb = 69°F

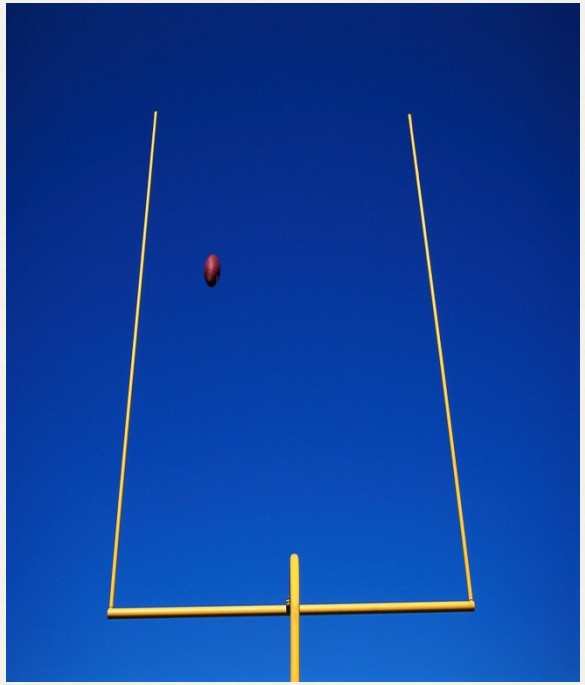
Extreme Temps =-50/105°F

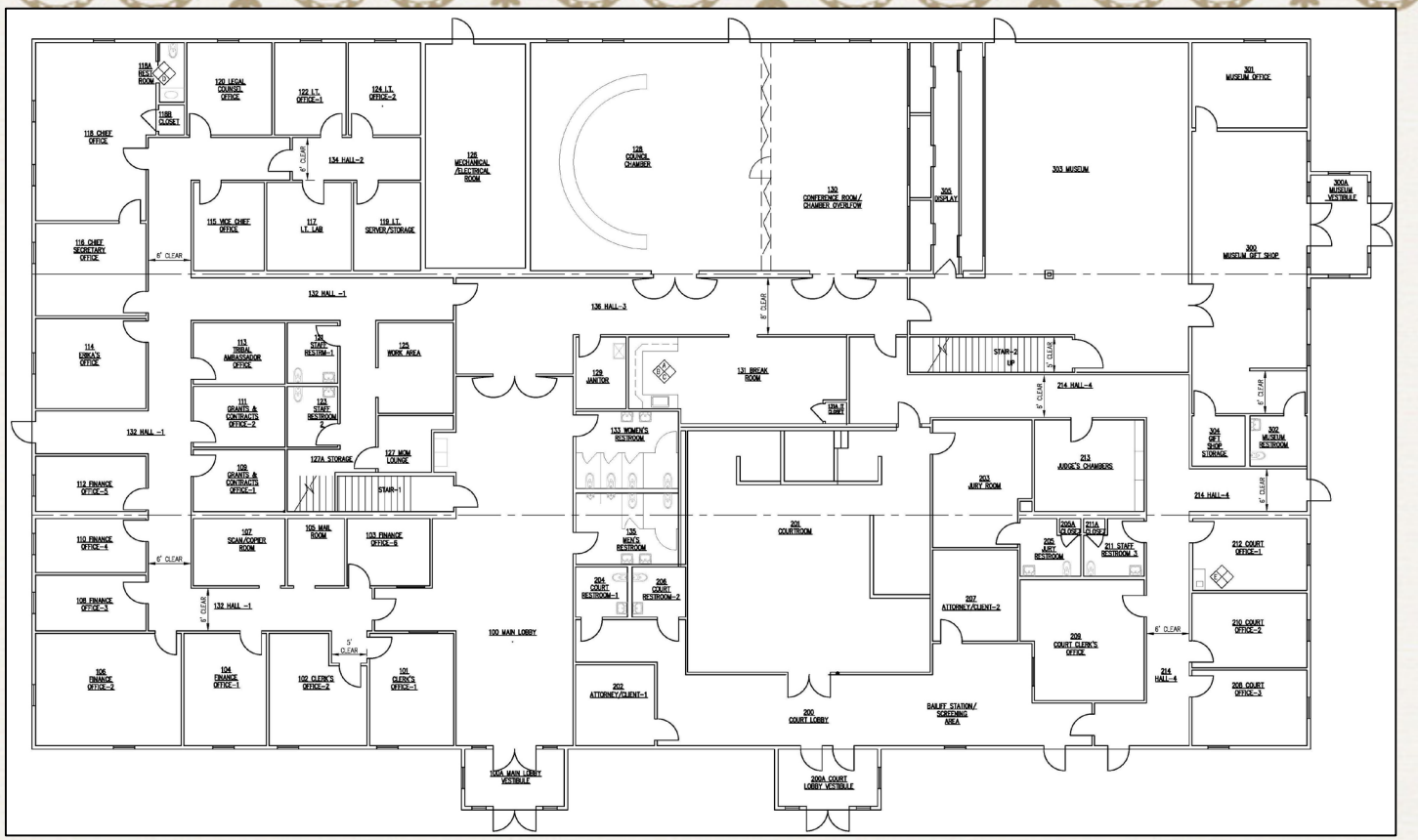


Joseph Attean
Penobscot New Party Chief

Design Goals

- Individual office/space temperature control
- High efficiency Heating/Cooling system
- Provide high efficiency Energy Recovery System, which also provides ventilation air.
- High R-Value building envelope
- Low U-Factor doors and windows
- Provide Solar Energy Panel system.
- Provide highly efficient redundant heating systems, which offer high energy savings, clean and comfortable heat, and shall have energy rebate potential.





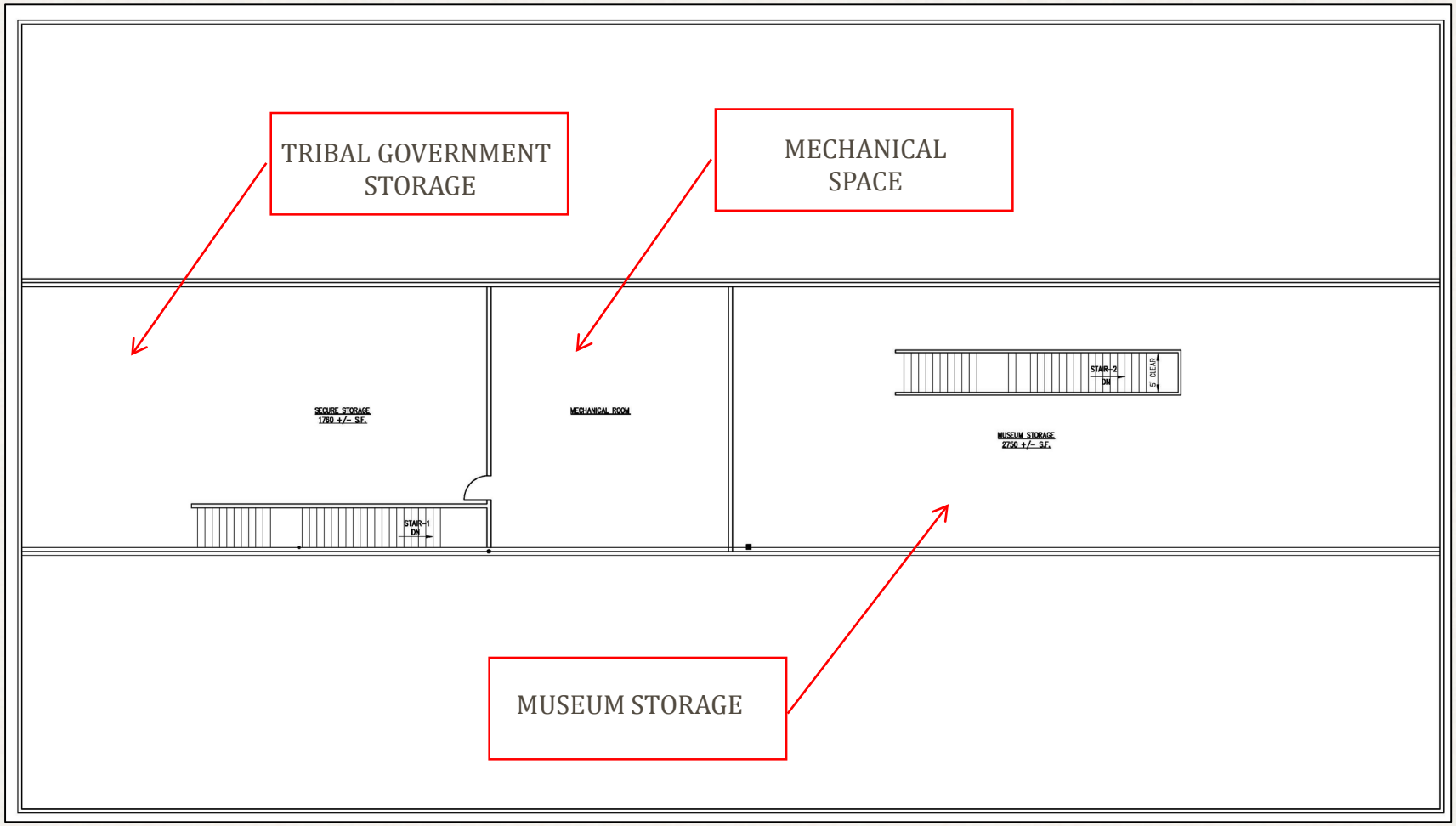
New Building Layout
1st Floor Plan

18,000sq.ft

100ft x 180 ft

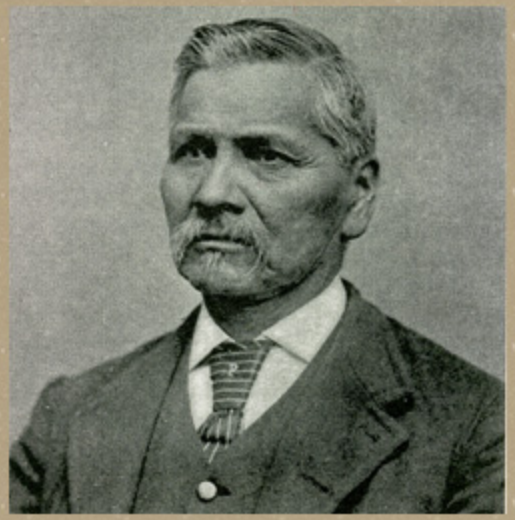
Attic Floor Plan

"If a child hasn't been given spiritual values within the family setting, they have no familiarity with the values that are necessary for the just and peaceful functioning in society."
~ Eunice Baumann-Nelson Ph.D




ADMINISTRATION
TRIBAL COURT

Penobscot Chief
Peter Nicolar



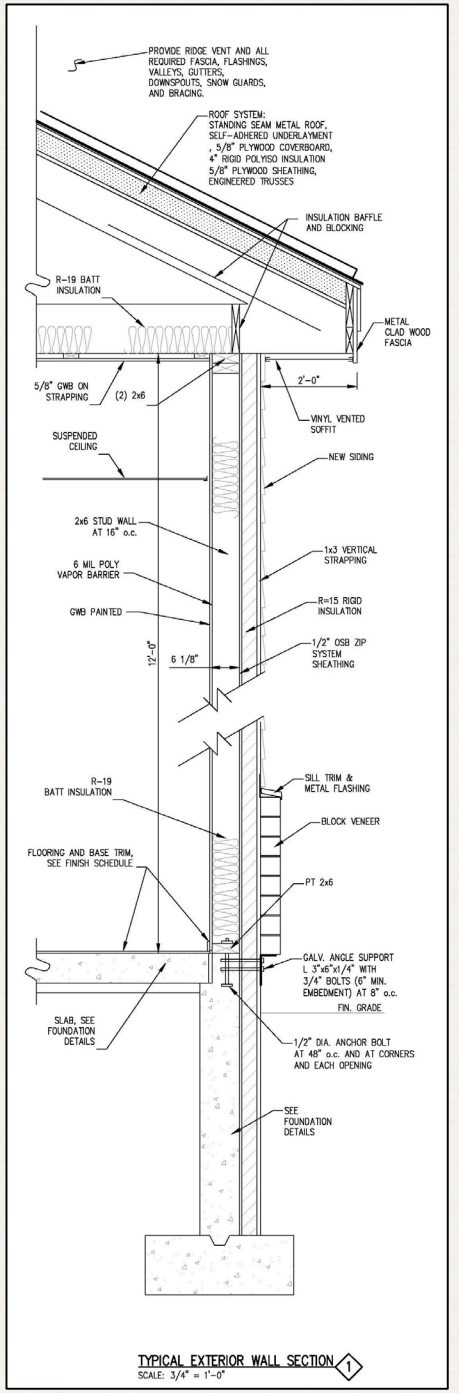
Joseph Nicolar

EEM-1: Improve Roof/Attic Insulation

- IECC requires attic insulation to have R-38 as minimum.
- Attic insulation shall have additional 6” cellulose insulation, which will provide R-59.

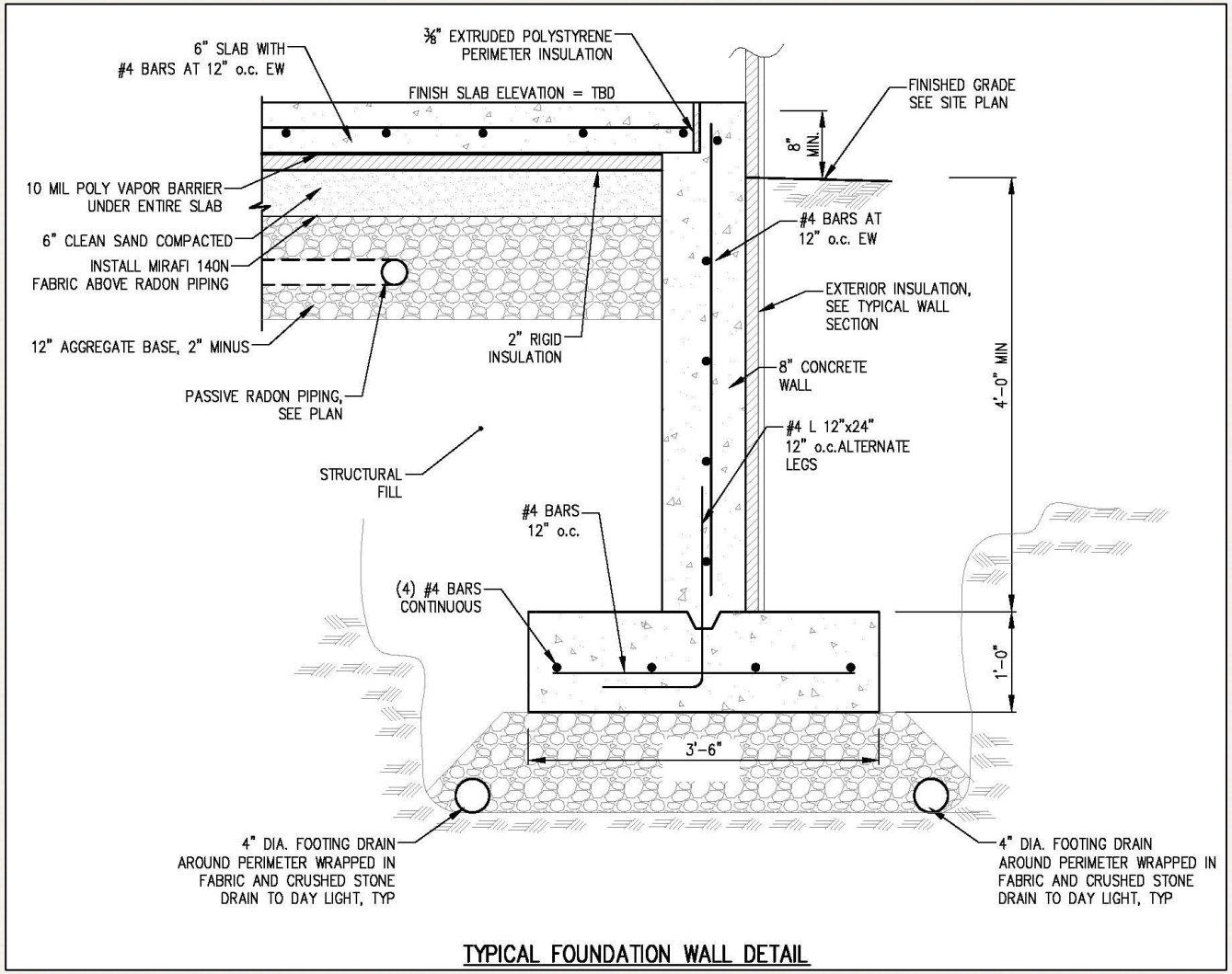
EEM-2: Improve Wall Insulation

- Baseline consists of R-13 batt insulation in wood stud wall construction and R-7.5 continuous exterior insulation, to meet 2009 International Energy Conservation Code.
- Add addition 1-1/2” of rigid insulation on exterior wall.
- Upgrade standard wall batt insulation to R-19.



EEM-3: Improve Under-Slab Insulation

- This EEM has a slab baseline without insulation.
- Add 2” rigid insulation under entire slab.

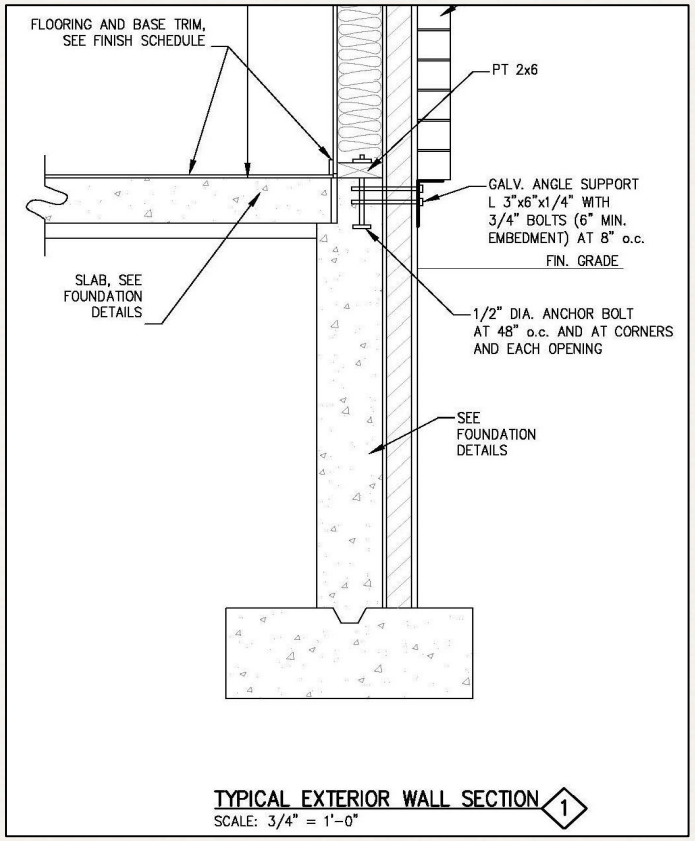


TYPICAL FOUNDATION WALL DETAIL

Saul Neptune,
Penobscot Old Party Chief

EEM-4: Improve Slab Edge Insulation

- IECC requires R-10 as minimum baseline, 2’ below grade.
- Install R-15 along entire vertical edge of frost wall.



EEM-5: Improve Windows

- This EEM proposes upgrades from the baseline R-3 window to R-5.
- Upgraded windows help reduce air infiltration and will reduce energy requirements for both heating and cooling.

EEM-6: Provide Energy Recovery Ventilation

- Standard energy recovery units are typically rated at 65-70% efficient.
- This EEM proposes to utilize a high efficiency energy recovery ventilator (ERV) rated at 80% efficiency.
- Latent energy capture will result in both significantly less required humidification in winter and dehumidification in summer.

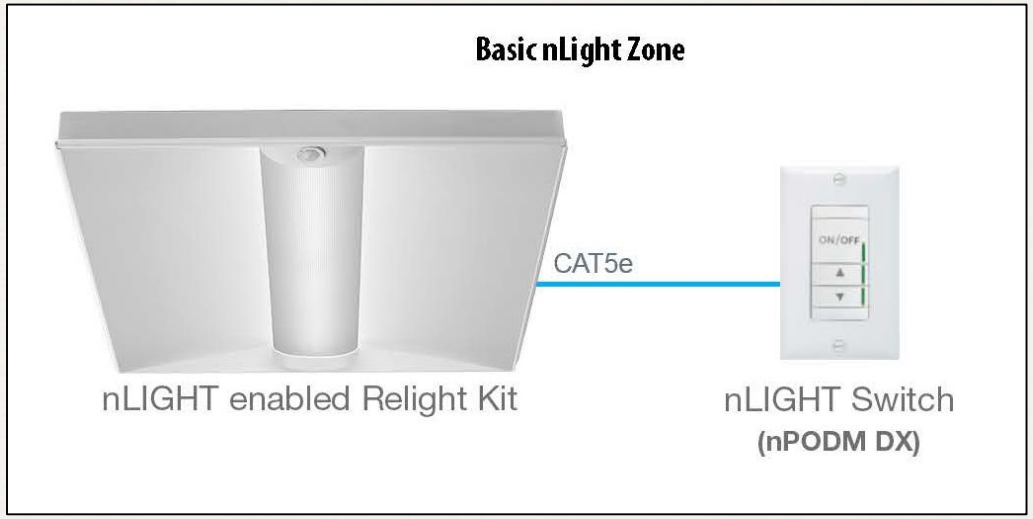
INDIAN ISLAND
PENOBSCOT RIVER

EEM-7: Improve Boiler Efficiency

- This EEM proposes the use of a condensing gas boiler package instead of a conventional boiler.
- National Renewable Energy Lab (NREL) studies on upgrading buildings with condensing gas boilers indicate our projected savings of 15% should be conservative.

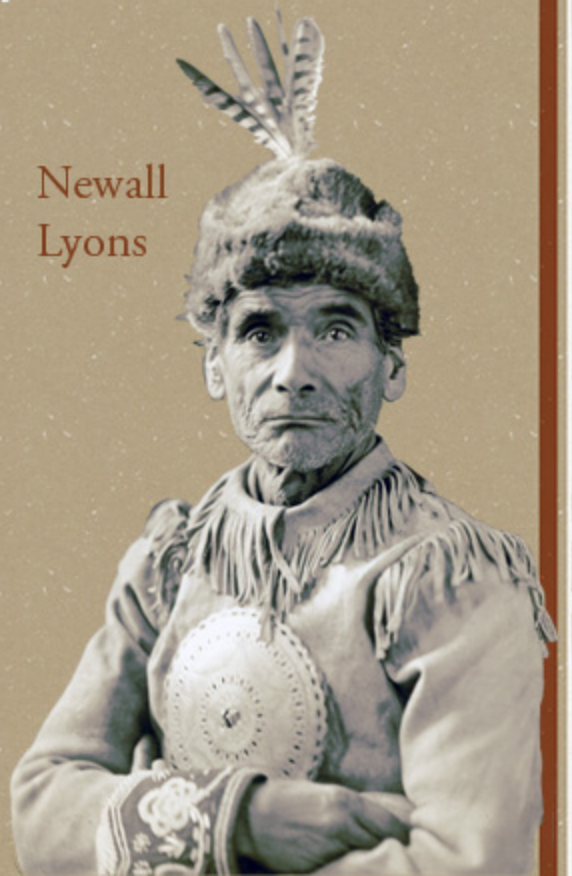
EEM-8: Improve Lighting Efficiency

- **Baseline includes utilizing standard T8 fluorescent lighting fixtures.**
- **Utilize LED fixtures throughout the building.**
- **LED fixtures save approximately 50% on light energy requirements.**



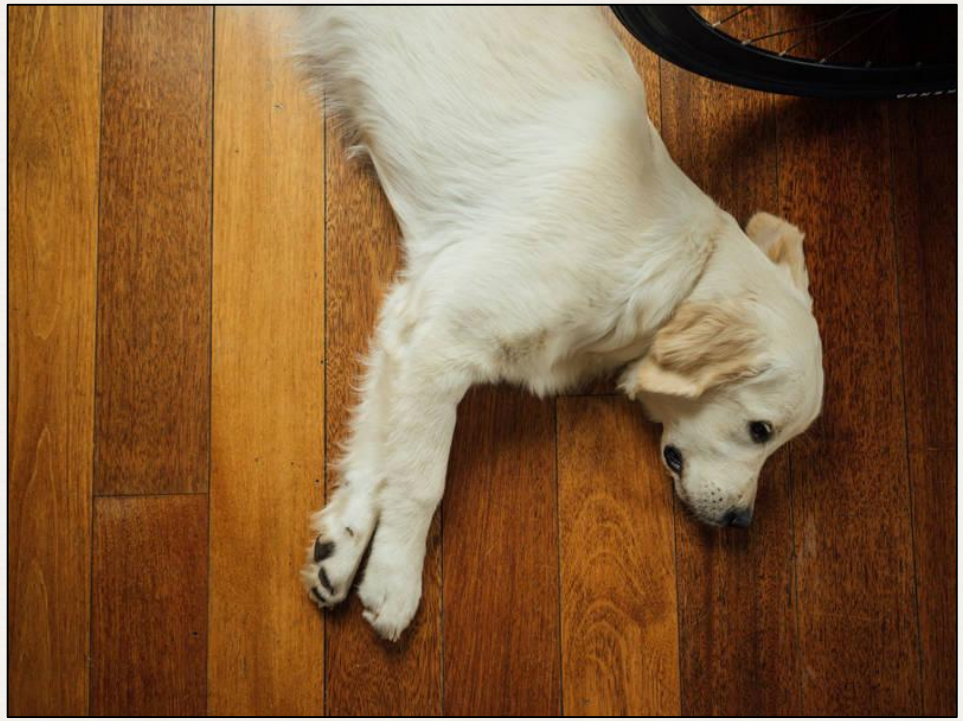
EEM-9: Improved Air Sealing

- The baseline has a maximum of .04 CFM/SF at 70 PASCALS.
- This EEM shall require the building to lose a maximum of .03 CFM/SF at 70 PASCALS.
- This will result in a very tight building envelope.



EEM-10: Radiant Heating

- This EEM proposes use of radiant heating instead of air based or convective heating terminal units. The American Society of Heating and Refrigeration Engineers (ASHRAE) Applications Handbook reports a reduction in heating load with radiant systems in the 4% to 16% range.



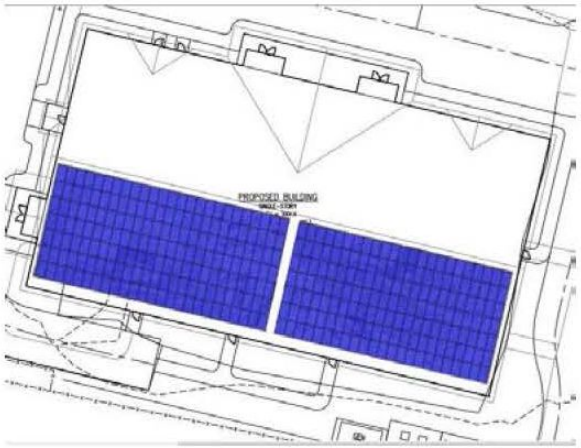
- Radiant heat also produces the cleanest and most comfortable forms of heat.

Solar Reflective System

- **100 kW Solar Electrical Producing System.**
- **Produces approximately 129,000 Kilowatt hours of clean renewable energy annually.**
- **Energy provision will allow electricity produced to be shared among other buildings owned by Penobscot Nation.**
- **Offsets approximately 136,000 lbs of carbon pollution annually.**

Francis Xavier Tomah

—107.52 KW SOLAR ELECTRIC SYSTEM—



- 336 Q Cells 320 Watt 60 cell solar electric modules
  Q Cells provides a 25 year linear power output warranty and a 12 year product warranty
- 2 SolarEdge grid-tied solar inverter(s)
  SolarEdge provides a 12 year warranty on solar inverters
- 171 SolarEdge P300 DC power optimizers
  SolarEdge provides a 25 year warranty on power optimizers
- Iron Ridge XR100 Aluminum rail mounting system
- Solar-Log web-based solar production monitoring system
- ReVision Energy 5-year workmanship warranty

QUESTIONS?