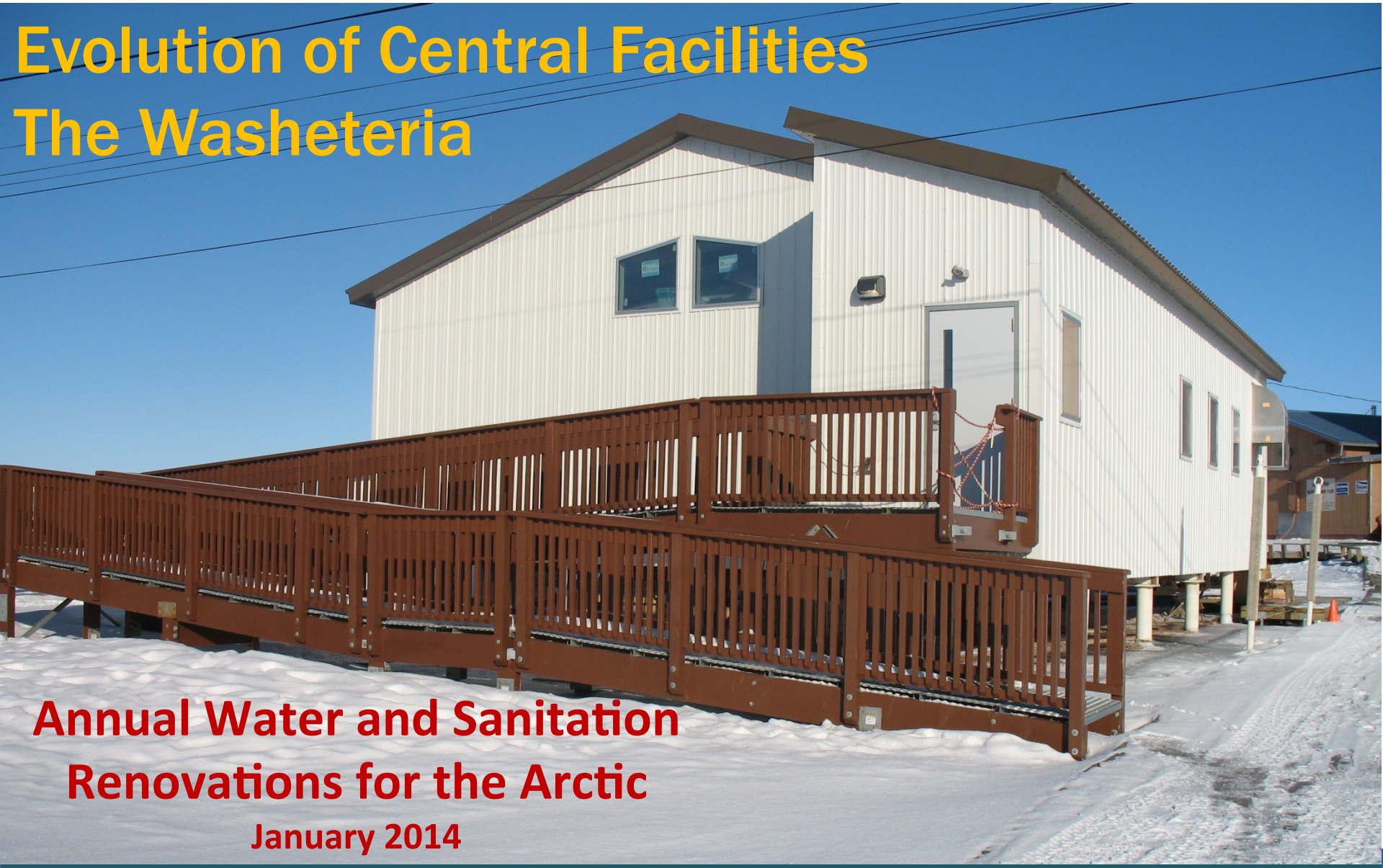
ANTHC | DIVISION OF ENVIRONMENTAL HEALTH & ENGINEERING

Evolution of Central Facilities
The Washeteria



Annual Water and Sanitation Renovations for the Arctic

January 2014

Birth of the Washeteria

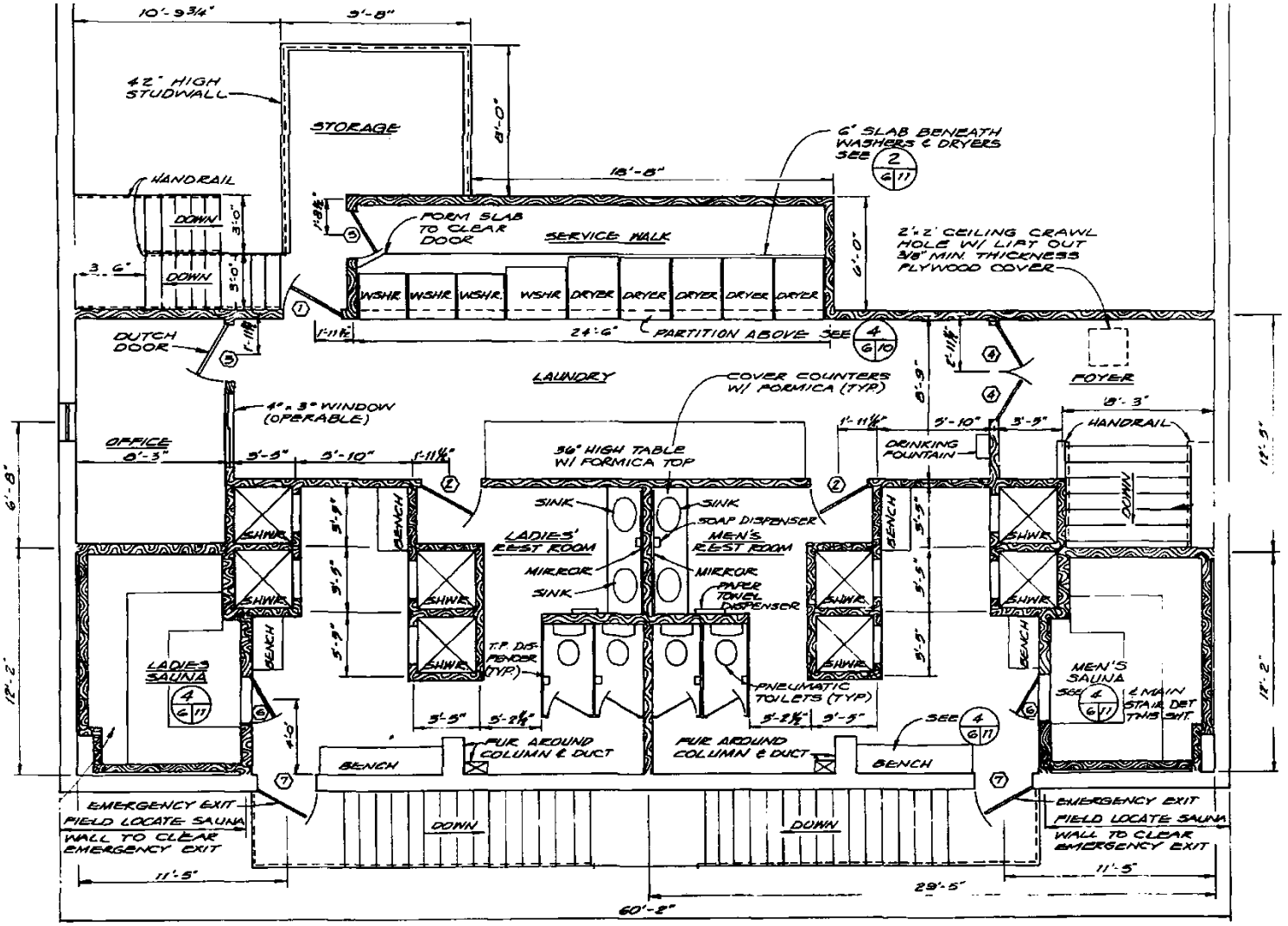
- Where was first washeteria constructed?

- Who built it?

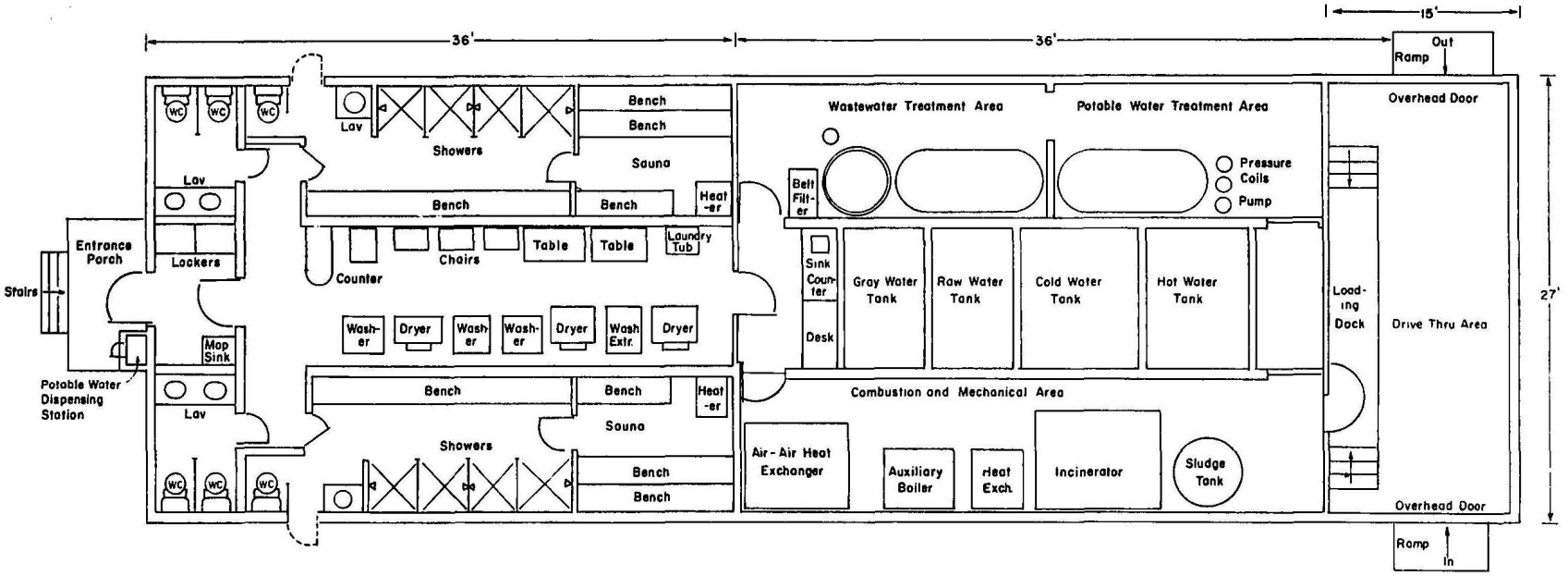
Birth of the Washeteria

- EPA: Alaska Village Demonstration Project 1970
  - Wainwright 1972
  - Emmonak 1976
- Alaska Village Safe Water Act of 1970
  - Central Facilities for 11 Communities
    - Northway and Chevak in 1972
    - Other 9 by 1979

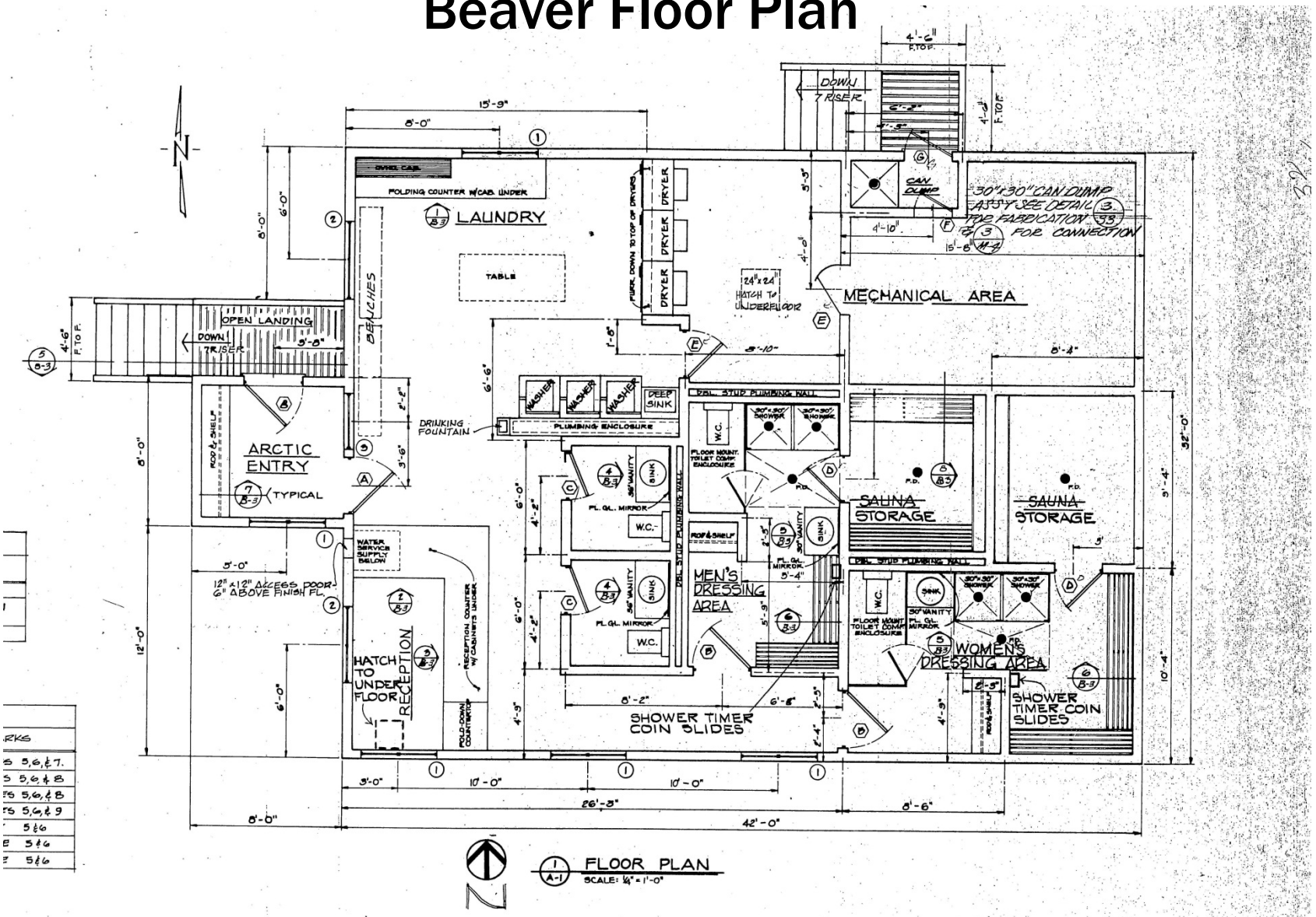
Wainwright Floor Plan II



Emmonak Floor Plan



Beaver Floor Plan



AVDP Project Reporting

- Washeteria concept acceptable.
- O&M will be a challenge.
- Cost: Too expensive with only user fees.

  "With rare exception, Alaska native villages cannot pay, through service charges, the full cost of routine operation and maintenance of water –related utilities, especially where complex treatment is required to meet technology-based or receiving water quality standards." (*Alaska Village Demonstration Project: Final Report*)

- Standards: No Single best method. Too many variations to establish workable number of standards.

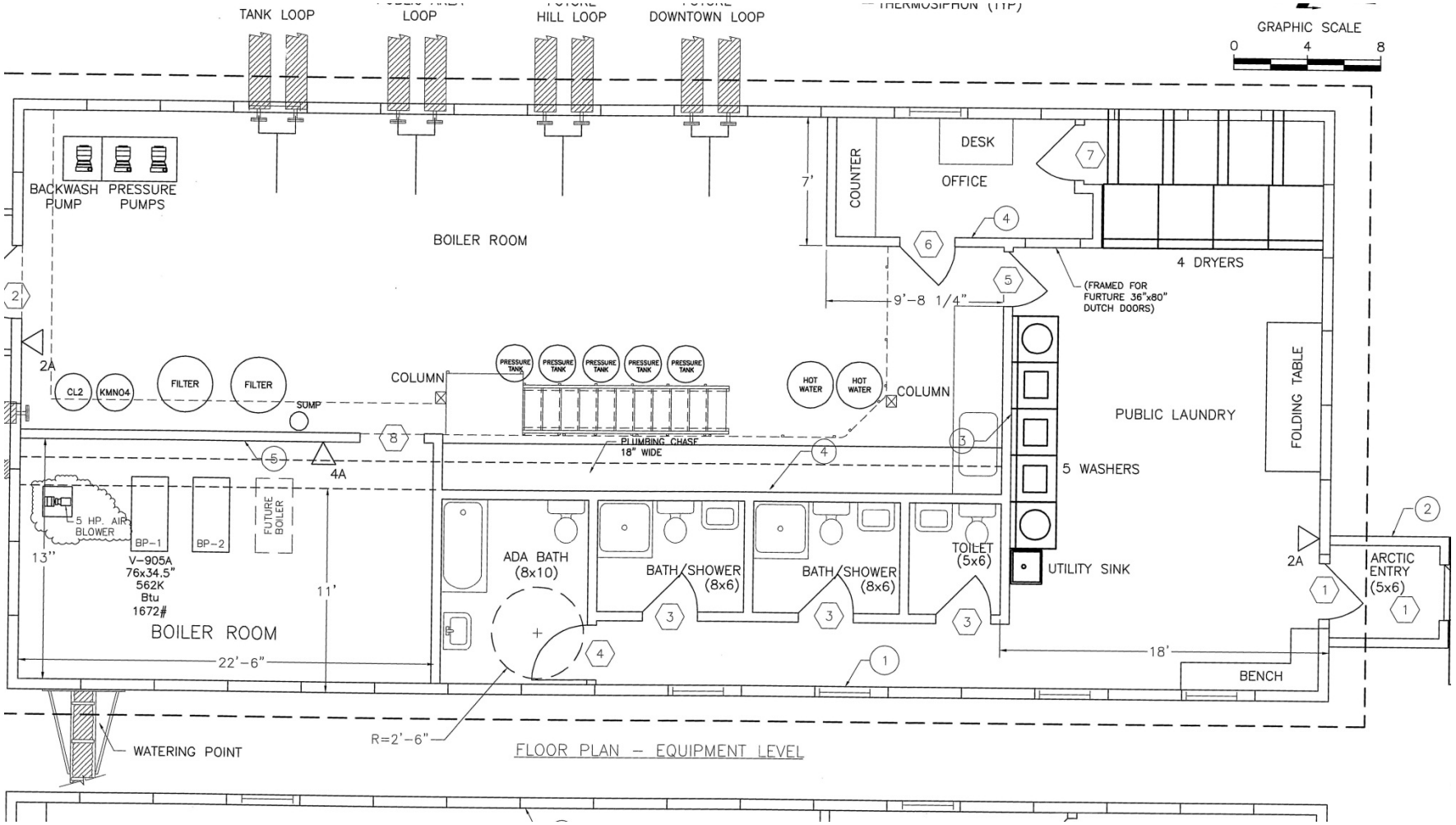
Standardization in 2013

- From Statewide Perspective: Little or none.
- Some Regional Standardization.
- Commonalities:
  - Toilets, Sinks, Showers
  - Washing Machines, Dryers

Plumbing Philosophy and Floor Plan

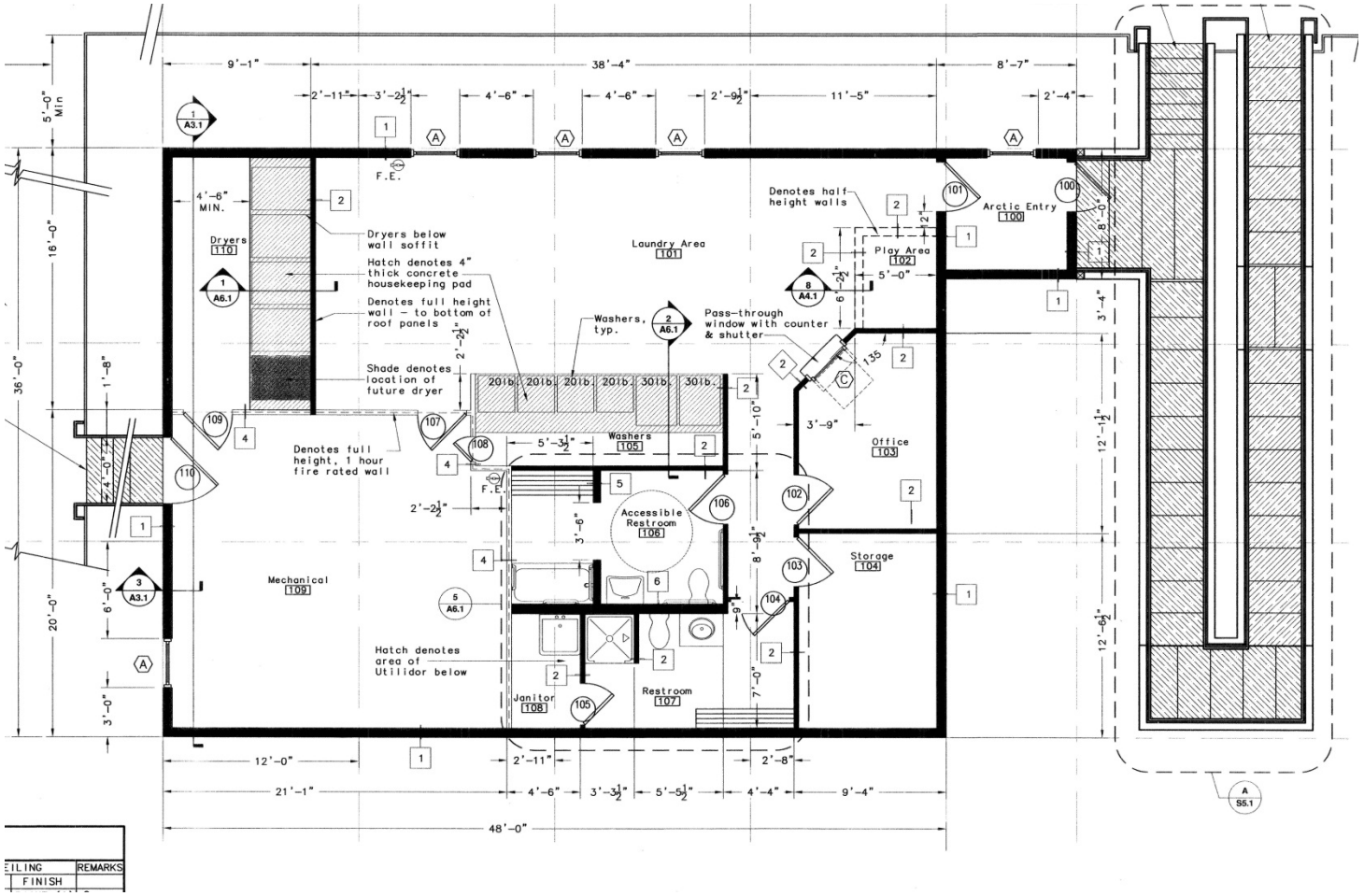
- All Plumbing within Envelope
  - Easy to access and maintain
  - Better Protected from Freezing
  - More restrictive floor plan
  - Challenging configurations
- Plumbing within Subfloor
  - Less Restrictive Layout
  - Difficult Access for maintenance/repair
  - Additional heating systems.

Plumbing Philosophy and Floor Plan



Plumbing Philosophy and Floor Plan

Plumbing Philosophy and Floor Plan



Structure

- Wood Construction
  - Panelized Construction
  - Stick Framed Construction
- Pre-fab Metal Buildings

Finishes and Aesthetics

- Floors
  - Durability, Ease of Repair, Application Safety, Community Preference.
  - Options: Concrete, Epoxy, Rubber, Polyurea, Flexible Epoxies.

- Interior Walls:
  - Painted Plywood, Sheetrock, Wainscot, Fiber Reinforced Plastic (FRP)

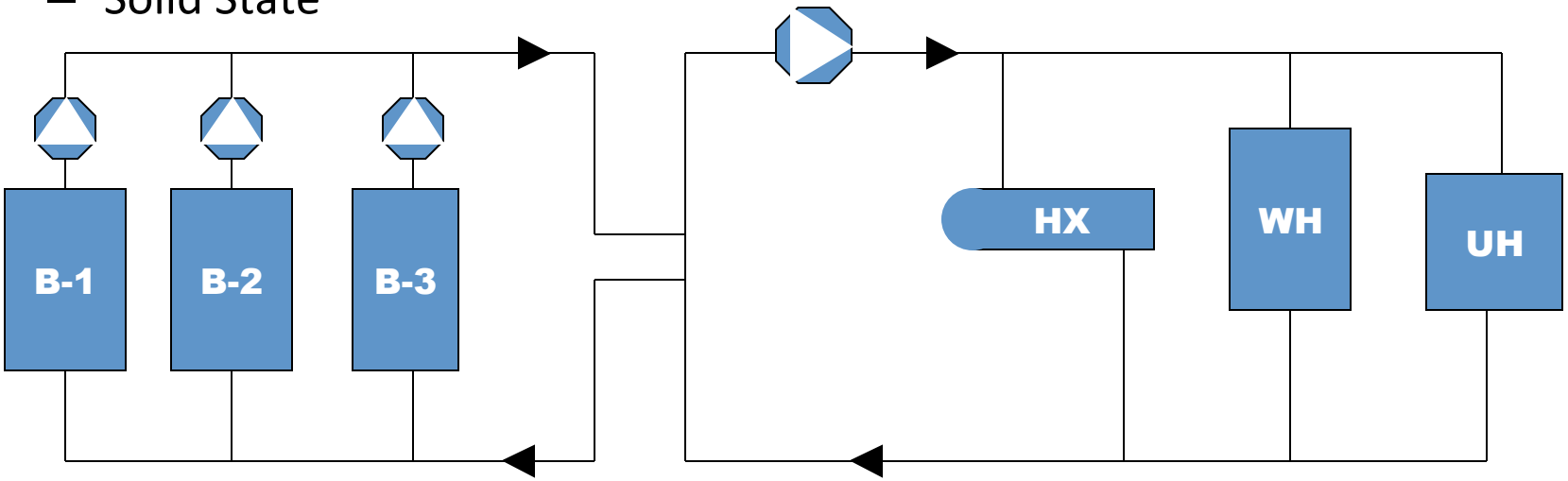
- Exterior Walls
  - T1-11
  - Metal Siding
  - Log Siding

Appliances

- Laundry Equipment:
  - Industrial
  - Tokens, Coins, or Attendant
  - Solid State Controls
- Washing Machines
  - Size Matters
  - Discharge
  - Ozonation
- Dryers
  - Temperature and Drying Time
  - Energy Source
    - Gas, Oil Fired, Electric
    - Hydronic
    - Waste-heat

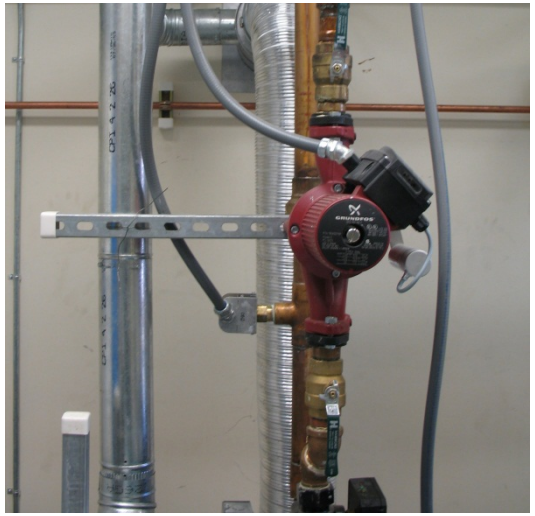
HVAC

- Boiler Sizing Philosophy
  - Peak Load, Full Redundancy vs.
  - Critical Loads, Double Redundancy
- Primary – Secondary Configuration
- Controls:
  - Electro Mechanical
  - Solid State



HVAC

- Hydronic Dryer Heating
  - Multistage heating
  - Make-up air
- Variable Speed Pumps
- Plastic Pipe vs. Copper
- Renewable Energy
- Condensing vs. Non-Condensing Boilers



Appurtenances

- Watering Point
- Saunas
- Service Sink
- Offices/Attendant Space
- Maintenance Closet
- Drinking Fountain
- Other Sales
  - Hot Water Sales
  - Snacks
  - Detergent

Soft Sciences

- Sustainability: How do we achieve it?
  - Project Delivery

    or
  - Community Development.
- Who is responsible?

"System design is not in common practice among engineers, not because it is too clever or too difficult, but because it does not fit the political mold. That is, full scale system application requires integration of bureaucratic responsibilities and profession disciplines. Governmental agencies with individual responsibilities for schools, sanitation, housing, communication, environment and the many of the subsystems must meet at a solution which is mutually attractive. Identification of subsystems should not and cannot be accomplished by engineers alone, but needs the participation of administrators, village people, physicians, teachers, sociologists and economists." *(Alaska Village Demonstration Project: First Generation of Integrated Utilities for Remote Communities)*

There Comes a Time
in the
History of Every Project
When It Becomes Necessary
to
Shoot the Engineers
And Begin Production

For More Information:

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