

# MISSED OPPORTUNITIES

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# BUILDING ENVELOPE

## ▶ Leaky Construction

- ▶ Leakage is a major issue
- ▶ Steel leakier than wood
- ▶ Complex geometry increases leakage

# BUILDING ENVELOPE

## ▶ Windows

- ▶ Lack of thermal breaks
- ▶ Poor curtainwall performance
- ▶ Overlarge window areas

# BUILDING ENVELOPE

## ▶ Attics and Roofs

- ▶ Voids in attic insulation
- ▶ Shafts and penetrations not sealed

# BUILDING ENVELOPE

## ▶ Entrances

- ▶ Lack of arctic entrance
- ▶ Poorly conceived arctic entrance
- ▶ Poor weather-stripping

# MECHANICAL SYSTEMS

## ▶ Sizing

- ▶ Actual loads smaller than design loads
- ▶ Larger systems in newer buildings
- ▶ Cost of over-sizing

# MECHANICAL SYSTEMS

- ▶ **Ventilation Systems**
  - ▶ **Scheduled ventilation**
  - ▶ **Demand controlled ventilation**
  - ▶ **Optimal control sequences**

# MECHANICAL SYSTEMS

## ▶ Exhaust Systems

- ▶ Exhaust dominant buildings
- ▶ Combine exhaust for heat recovery
- ▶ Variable speed exhaust

# MECHANICAL SYSTEMS

## ▶ Heat Recovery

- ▶ Server room/boiler rooms/refrigeration
- ▶ Transfer heat to high heat loss areas

# COMMISSIONING

## ▶ Verification

- ▶ Contractors do not check their work
- ▶ Owner training and customization
- ▶ Feedback for designers