



AIRAH Mistakes Seminar



WOOD & GRIEVE ENGINEERS

Presented by : Angus Grant M.AIRAH
Principal at Wood & Grieve Engineers



Introduction

“Mistakes are valuable guides – they should not be forgotten or concealed. Rocks and reefs are charted on maps as a warning to sailors – shouldn't we do the same with our mistakes and failures?”

– Ove Arup



AIRAH Mistakes Seminar

Overview

- Design mistakes
- Installation Mistakes
- General Mistakes
- How do we get things right?



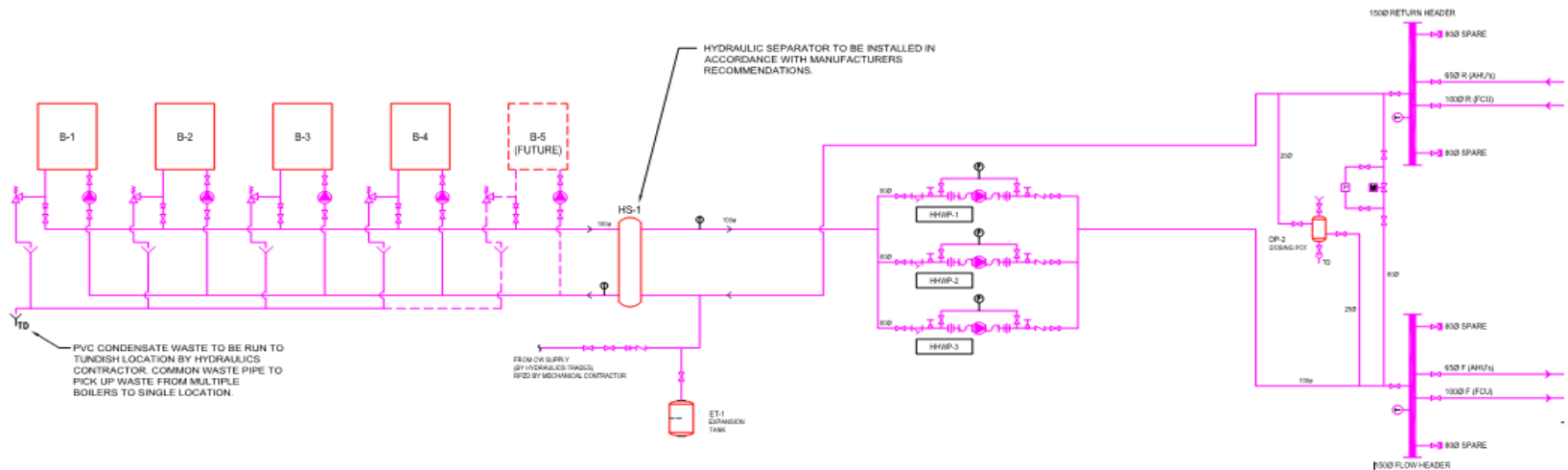
Design Mistakes

- Heat Load calculation mistakes
 - Building orientation
 - Poor zoning
 - Incorrect building fabric data



Design Mistakes

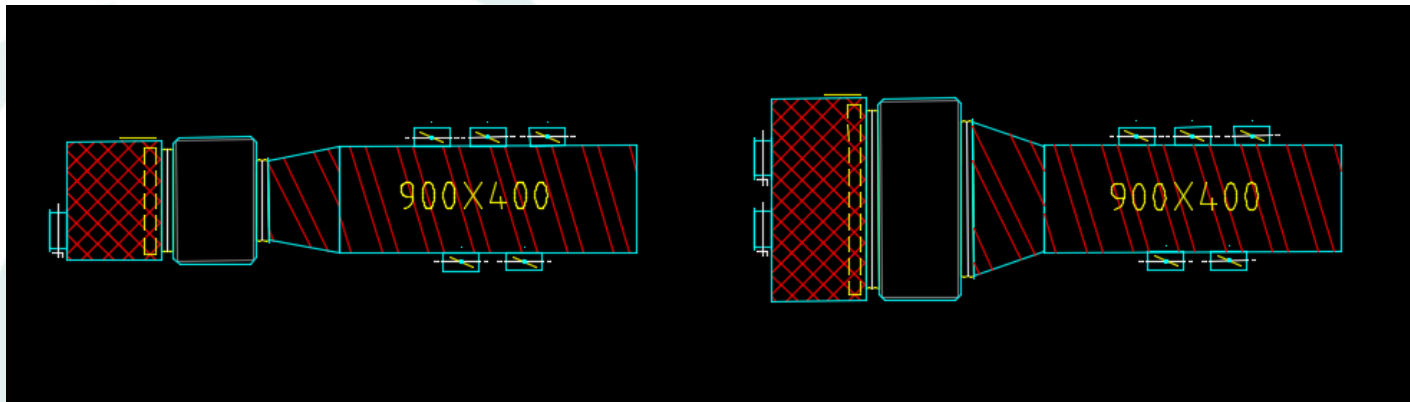
- Poorly conceived concepts
- Specification of condensing boilers with 80/60 deg C flow & return temperatures
- Fire mode considerations
- Primary/Secondary pumping arrangements incorrectly configured
- Heat rejection system placement





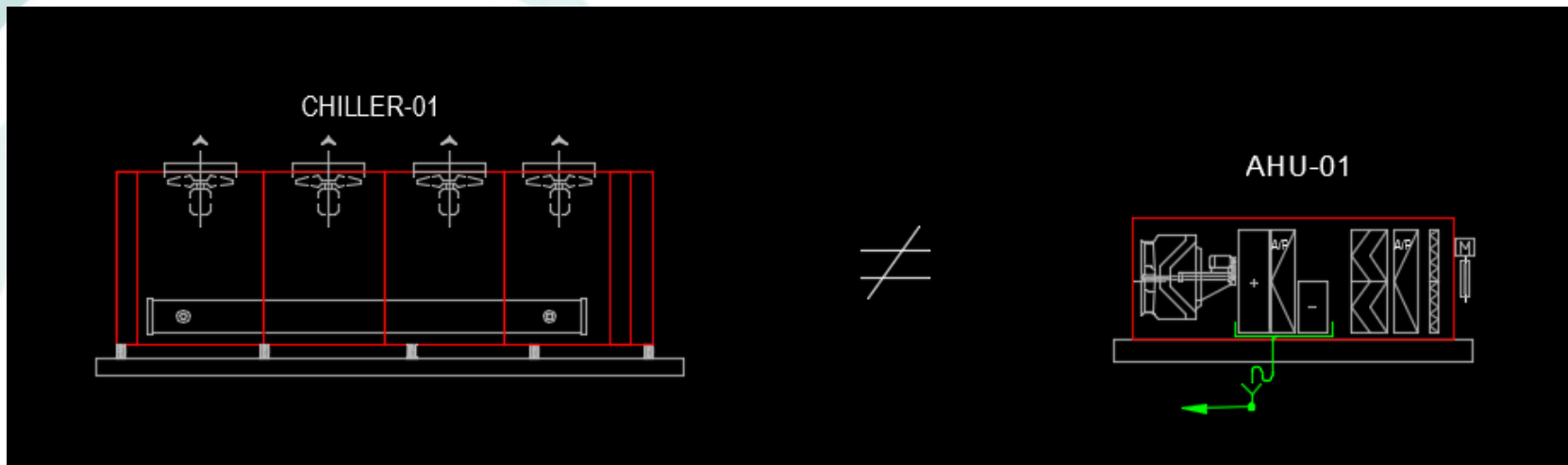
Design Mistakes

- Spatial planning mistakes
 - Specified equipment not accurately represented or accounted for – often twice the size.
 - Clashes with other trades and building structure
 - Poor architectural co-ordination



Design Mistakes

- Air and thermal balance issues
 - Equipment flow rates don't match design drawings
 - Chilled water and heating hot water flow rates don't match pumps or chiller/boiler selections
 - Air and water system capacities not matched





Design Mistakes

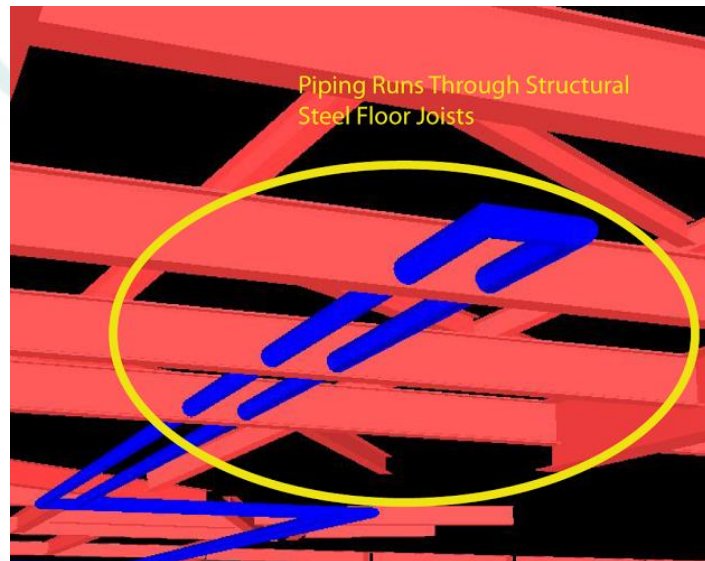
- Interface and scoping issues
 - Electrical systems
 - Fire detection systems
 - Hydraulic systems
- Documentation quality
 - Equipment specifications and drawings not consistent
 - Specifications are cut and paste from a previous project and contain a lot of non-relevant information
 - Specifications are unspecific and contain information not relevant to the project





Installation mistakes

- Clashes between structure and mechanical services.....shop drawings not using latest structural drawings, or not understanding drawings
- Drafting using either wrong or "uncertified" equipment drawings from equipment suppliers.....spatial and connection issues



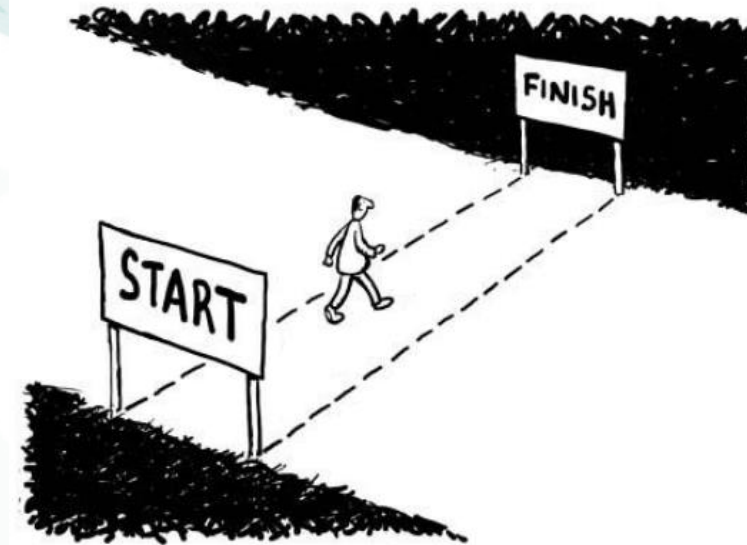


Installation mistakes

- Temperature sensors incorrectly located
- Control systems cross connected
- Heat exchangers installed and connected back to front due to limited connection information
- Cross connected HHW/CHW or flow and return pipework
- Duct work integrity – significant leakage issues & no pressure testing

General Mistakes

- Poor staff continuity on projects – applicable to consultants and contractors
- Under pricing projects – relevant to consultants and contractors





How do we get things right?

- Continued training of our staff
- Industry involvement - like attending this seminar
- Acknowledge our mistakes and learn from them