

Pitfalls in the Design, Construction and Commissioning Processes



By
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FACT:

**Pitfalls in the Design,
Construction and
Commissioning Processes can
delay the initiation of the
operation of a laboratory!**

Overall Presentation Goal

Equip the Biosafety Professional with the tools to oversee biocontainment planning, design and construction activities

BECAUSE

The Biosafety Professional needs to be the Big Dog!

To Control:



Design Hund, Clocker
and Money Bags



Project Influences during Design

- Application of the BMBL guidelines to architectural and engineering decisions
- Application of the NIH Policy and Design Guidelines to architectural and engineering decisions
- Use of good engineering practices for design of biosafety containment facilities
- Project Budget
- Project Schedule



**Project
Scope**

Major Pitfalls for Project during Design

- **Scope – Don't assume designers know the principles of Biosafety - Be the Educator!**
- **Budget – Live within your means, be the Parent!**
- **Schedule – The deadline is real, be the Taskmaster!**

Major Pitfalls for Project during Design-Cont'd

- **Designers are in the business of ideas and their next job often depends on innovation.**
- **Designers may misinterpret guidelines to justify innovations or they may be unfamiliar with biosafety requirements.**

By Definition....

A Designer is a person who takes abstract ideas together with scientific concepts and principles and changes them into malfunctions.



Incorrect thimble application for B2 Biosafety Cabinet

Be the Educator!

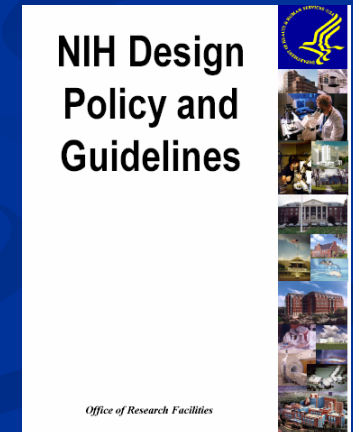
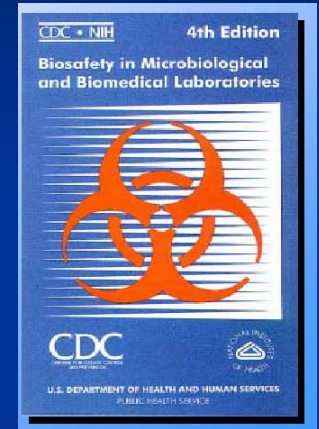
The Biosafety Officer should question the design, fully understand the

- **BSL1** - agents not known to cause disease.
- **BSL2** - agents associated with human disease.
- **BSL3** - indigenous/exotic agents associated with human disease and with potential for aerosol transmission.
- **BSL4** - dangerous/exotic agents of life threatening nature.

reasoning for biosafety decisions and keep records for future reference. If need be, educate the Design Team and your administration.

Educate the Design Team on the interpretation of the guidelines and standards!

The BMBL
sets the guidelines for basic
design and procedures
while
the NIH Design Guidelines
set the design criteria as an
industry standard.



Educate the Design Team

Got Select Agents?

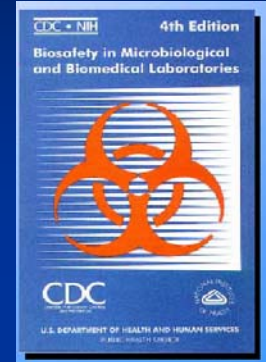
The BMBL is now a regulation!

Got Animals?

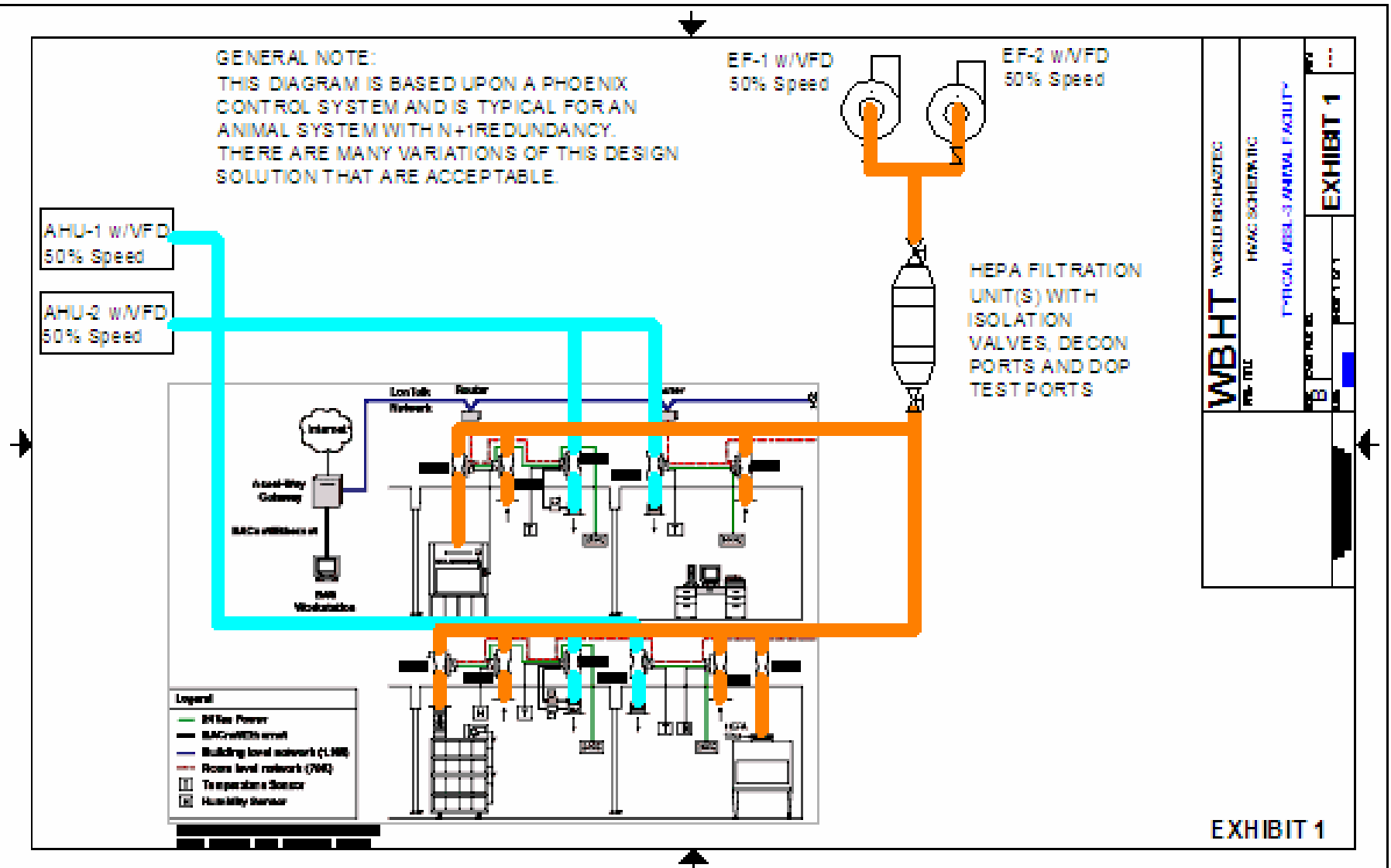
NEED to comply with AALAC
Regulations?

Got Large Animals?

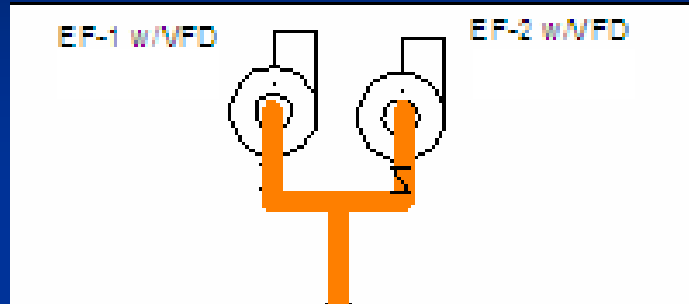
Need to follow Department of
Agriculture Requirements.



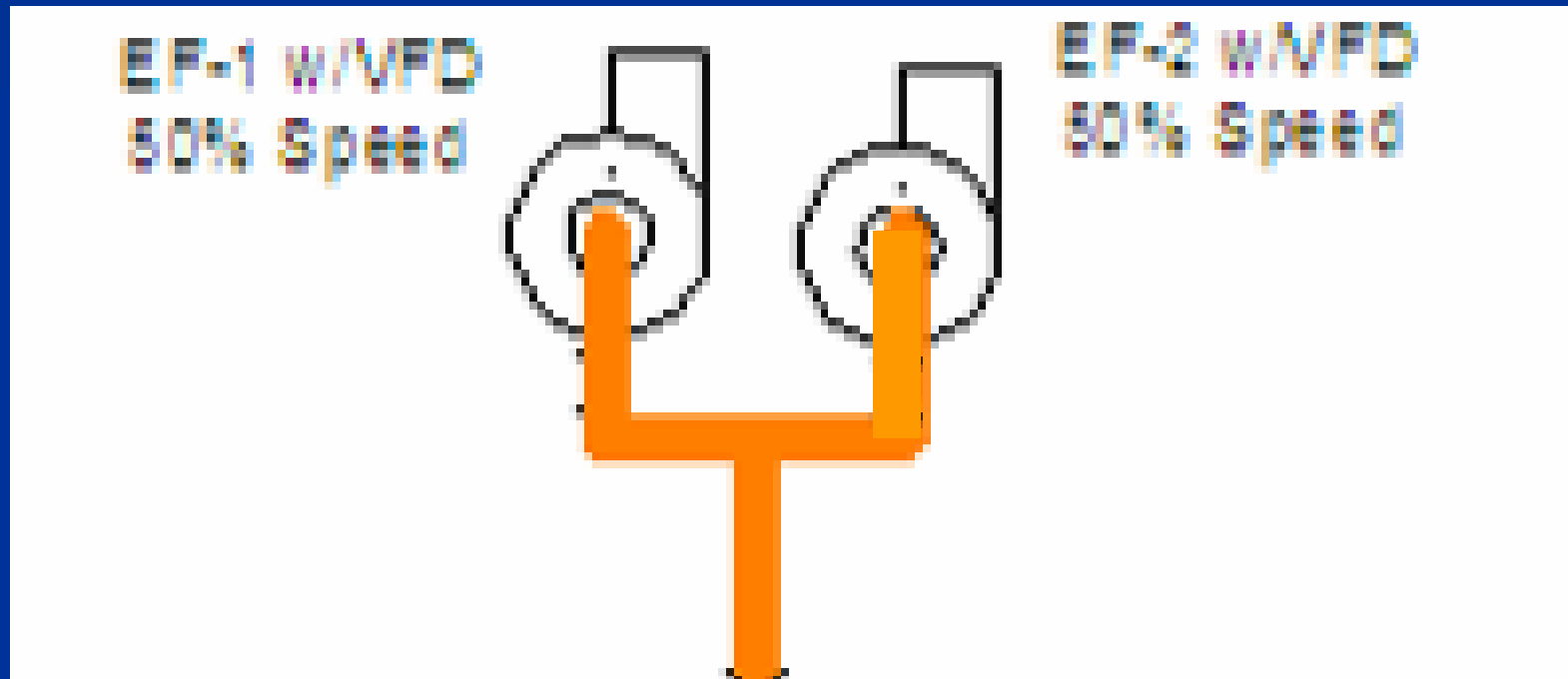
GOAL - UNDERSTAND



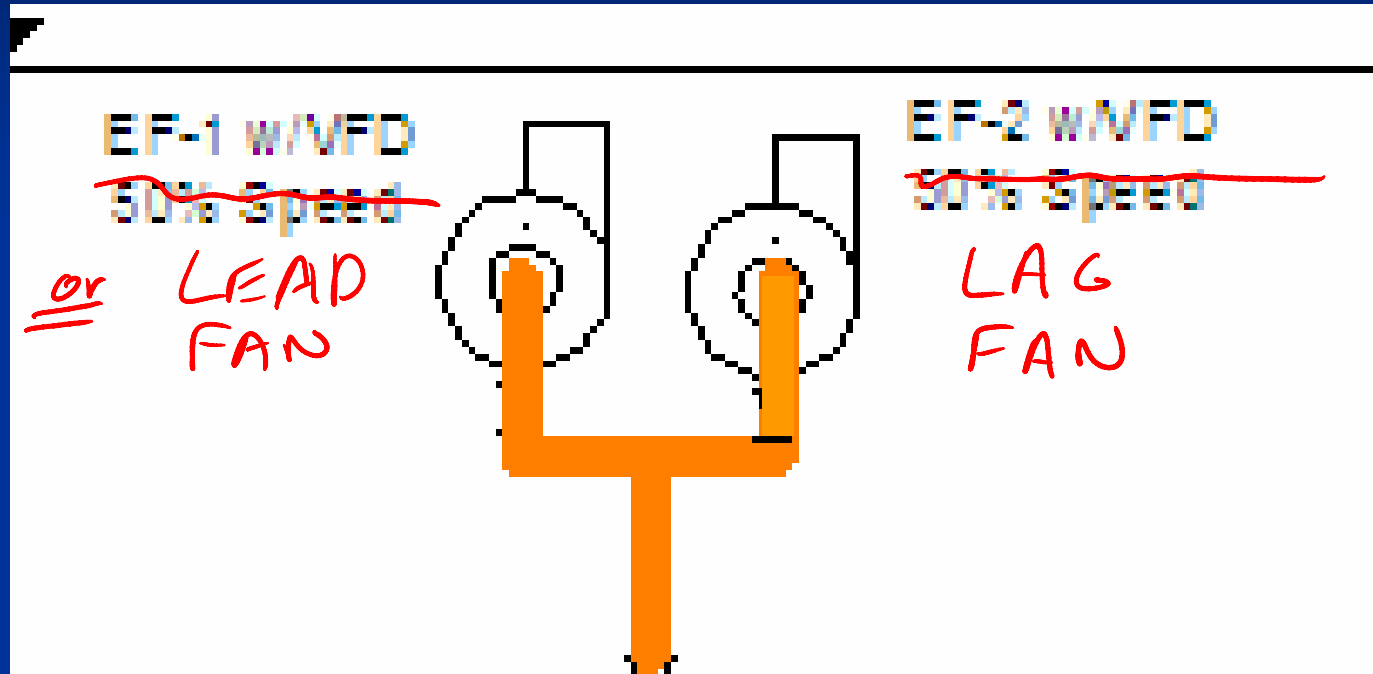
Options



Options



Options



Be the Parent!

**Containment labs are a marriage
of Administrative Controls and
Engineering Controls.**

**Engineering Controls directly
impact costs!**

Value Engineering (VE)

- The only time for value engineering is during the Basis of Design (BOD).

VE should improve a design feature AND save money.

Ask the Question...

If money is the issue, select what you can afford and ask for what you would prefer to be an “add alternate.”

Let the Market Provide the Answer.

Be the Taskmaster!

Insist on Realistic timelines.

Require sufficient time for occupancy and certification in the schedule.

Substantial Completion is not an occupancy date and needs to be defined in the design phase.

Construction Pitfalls

The Biosafety Professional Big Dog says, “You’ve got to watch construction like a hound dog!”



Construction Pitfalls Do's and Don'ts

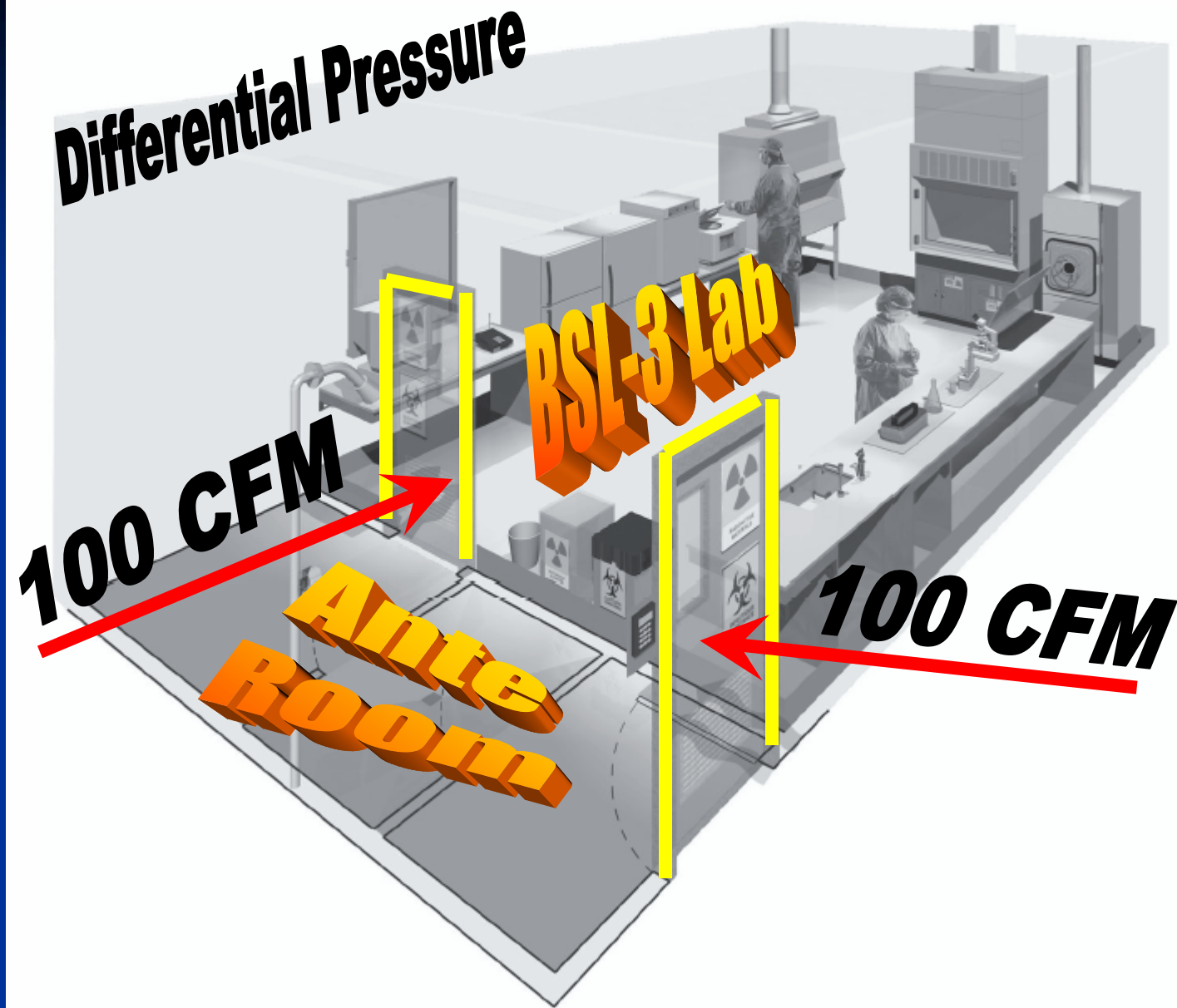
- *You cannot direct construction.*
- *Avoid redesign unless the program requires the change.*
- *Make the Contractor aware of construction concerns through the Owner's Representative.*

Construction Pitfalls Do's and Don'ts

- *Bring to the Owner's Representative's attention (referencing specifications section) acceptance requirements for containment construction (i.e. finishes, maintenance of equipment.)*
- *Attend construction meetings and/or receive minutes.*

Commissioning Pitfalls Do's and Don'ts

- *During design, establish performance requirements for:*
 - *Finishes*
 - *Differential Pressure Acceptance*



Commissioning Pitfalls Do's and Don'ts

- *Building Equipment Access*
- *Building System Failure Testing*
- *Attendance of Commissioning Meetings during Construction*

Commissioning Pitfalls Do's and Don'ts

- *Observe only, commissioning is part of the construction contract.*
- *Do not agree to partial air balancing testing.*
- *Do not direct the work of the commissioning agent or other testing personnel.*
- *Review testing equipment certificates, especially for calibration dates.*

Commissioning Pitfalls Do's and Don'ts

- *Compare test results with design criteria.*
- *For record purposes, obtain copies of all test data for biosafety systems.*
- *Insure maintenance information is collected and maintenance training is conducted.*
- *Formulate preventive maintenance program during commissioning process.*

Questions??????

