IT Architecture:
Mastering Complexity With Design

(http://www.esp.org/briite/meetings)

Robert J. Robbins

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What is Architecture?

What is Architecture

- Art?

- Science and engineering?

- Magic?

- Something else…

What is Architecture

- Art?

Antoni Gaudi
1852-1926

What is Architecture

- Art?

- Science or engineering?

What is Architecture

- Art?

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What is Architecture
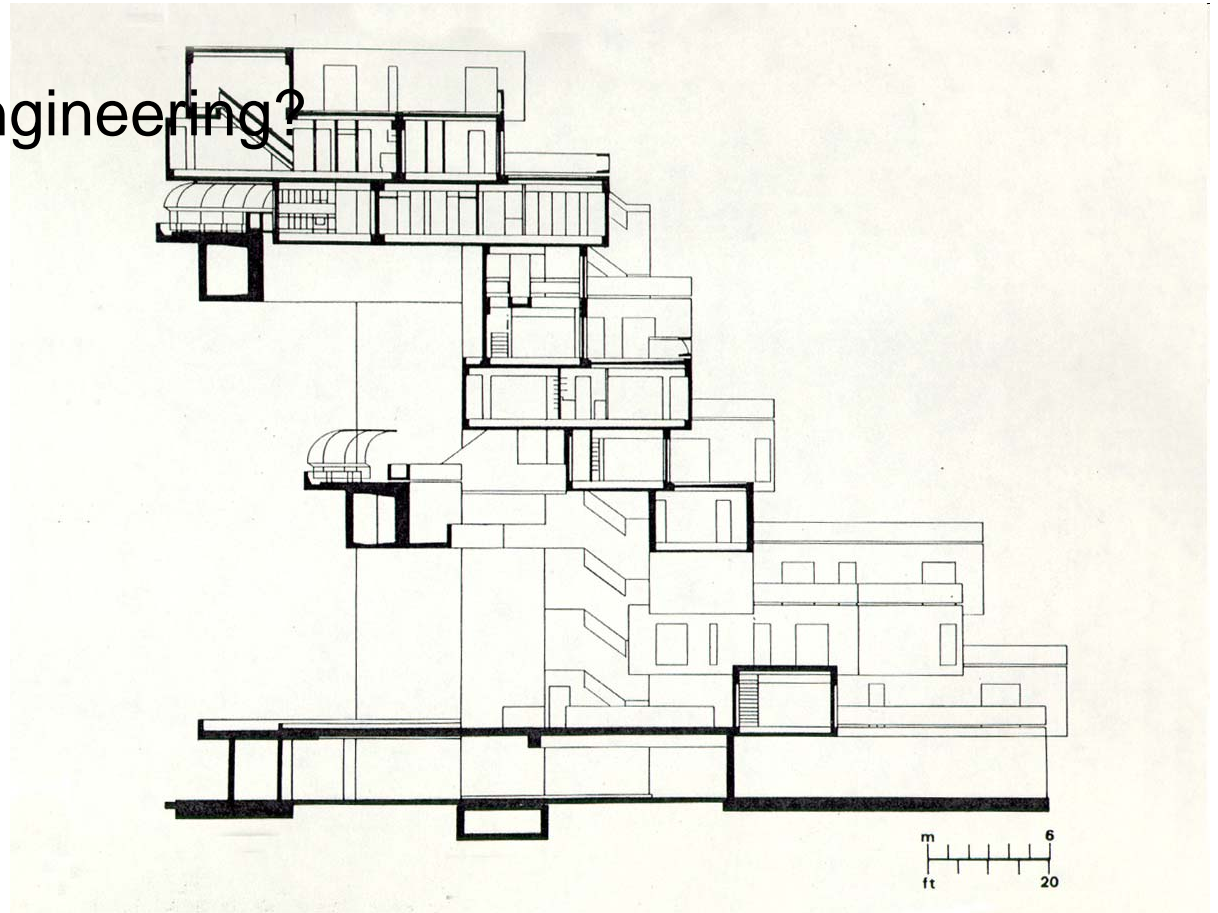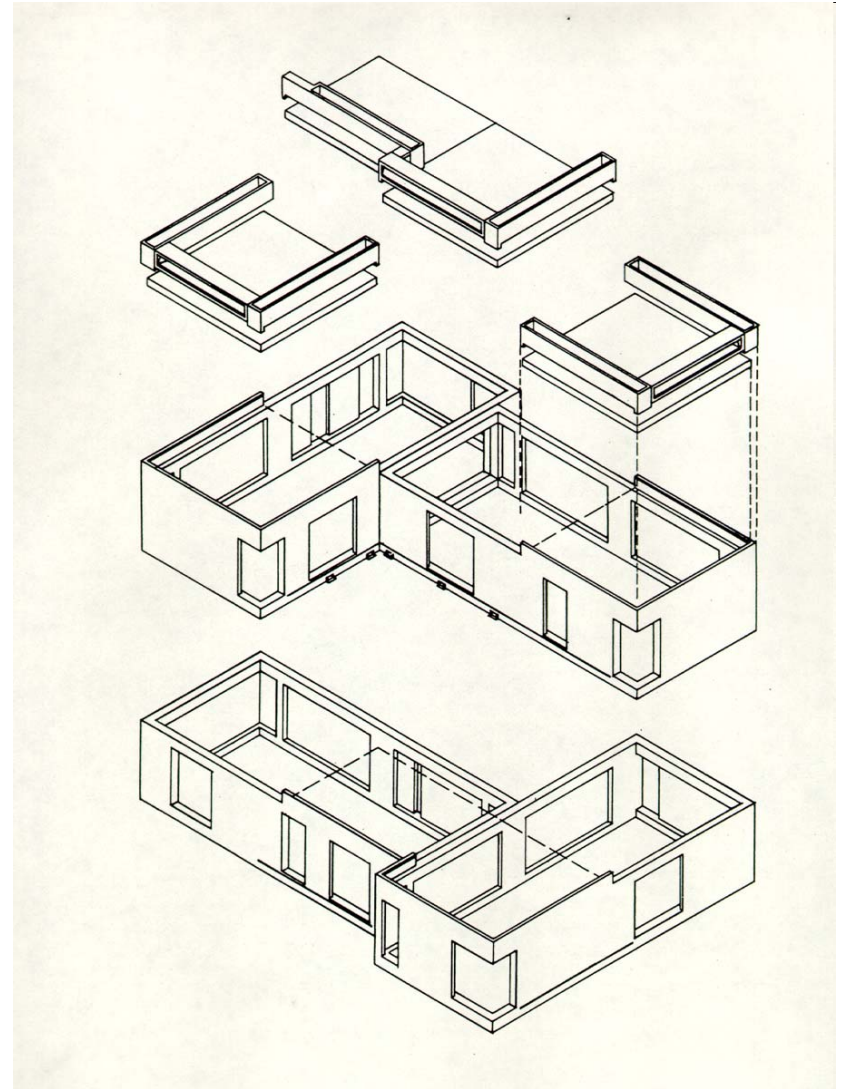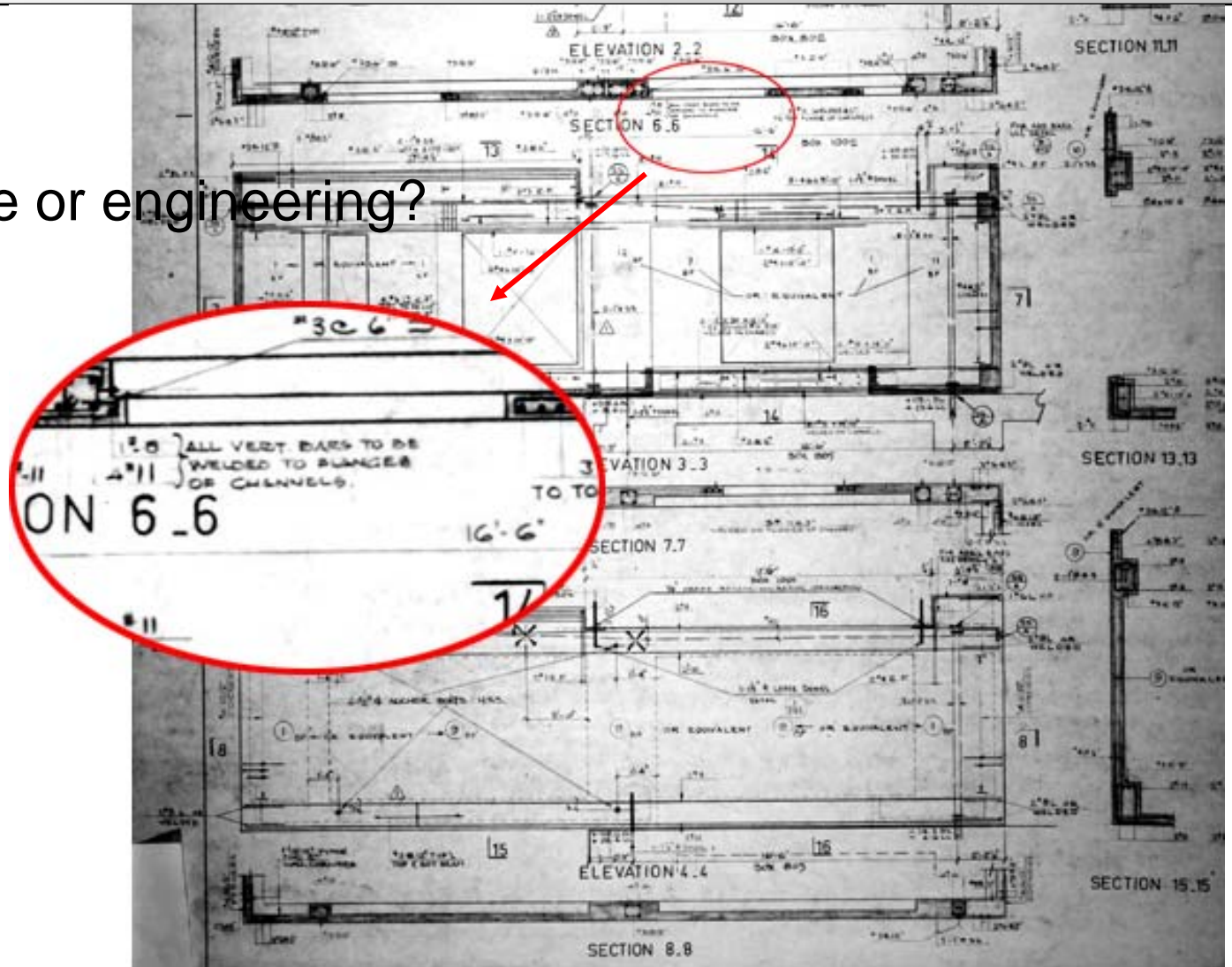
- Art?

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What is Architecture

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- Art?

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- Magic?

Imhotep
~ 3150 BC

Stepped Pyramid of Saqqara (Djoser)

What is Architecture

- Art?

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Unknown Ancient Architects

Stonehenge

Göbekli Tepe

Machu Picchu

Notre Dame
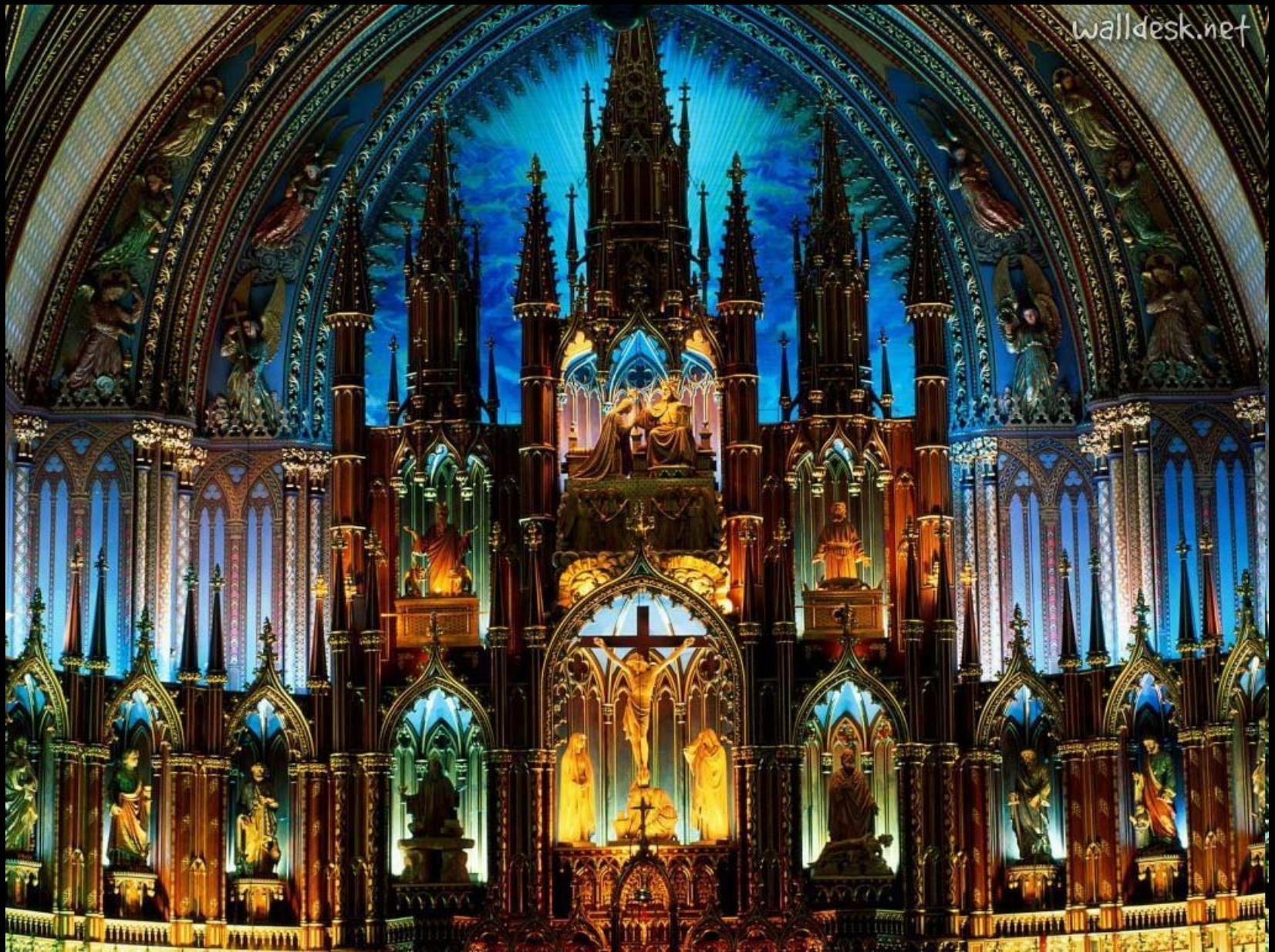
Ticky Tacky

What is Architecture

- Art?
-
-

Architecture is some combination of art, science, aesthetics, and engineering that serves as the basis for converting ideas into coherent reality.

Architecture – definition

ARCHITECTURE

1: the art or science of building; specifically : the art or practice of designing and building structures and especially habitable ones

2: (a) formation or construction resulting from or as if from a conscious act <the architecture of the garden>; (b) a unifying or coherent form or structure <the novel lacks architecture>

3: architectural product or work

4: a method or style of building

5: the manner in which the components of a computer or computer system are organized and integrated

Webster's On-Line

What is IT Architecture?

IT Architecture – definition

Information Technology Architecture is the process of development of methodical information technology specifications, models and guidelines, using a variety of Information Technology notations, for example UML, within a coherent Information Technology architecture framework, following formal and informal Information Technology solution, enterprise, and infrastructure architecture processes. These processes have been developed in the past few decades in response to the requirement for a coherent, consistent approach to delivery of information technology capabilities. They have been developed by information technology product vendors and independent consultancies, based on real experiences in the information technology marketplace and collaboration amongst industry stakeholders, for example the Open Group. Best practice Information Technology architecture encourages the use of open technology standards and global technology interoperability.

Grady Booch, Ivar Jacobson, and James Rumbaugh are accredited with developing the first Unified Modelling Language (UML), currently the most successful (i.e. widely used) technology modeling language.

IBM was an early developer of formal solution and infrastructure architecture methodologies for information technology.

Wikipedia, 2011

IT Architecture – definition

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The development of methodical IT specifications, models, and guidelines, within a coherent framework.

Wikipedia, 2011

IT Architecture – definition

An Information Technology (IT) Architecture is a blueprint that is developed, implemented, maintained, and used to explain and guide how an organization's IT and information management elements work together to efficiently accomplish the mission of the organization. An IT Architecture addresses the following views: business activities and processes, data sets and information flows, applications and software, and technology. A proper Architecture is NOT limited to hardware and software issues.

US Department of Commerce, 2004

http://www.briite.org
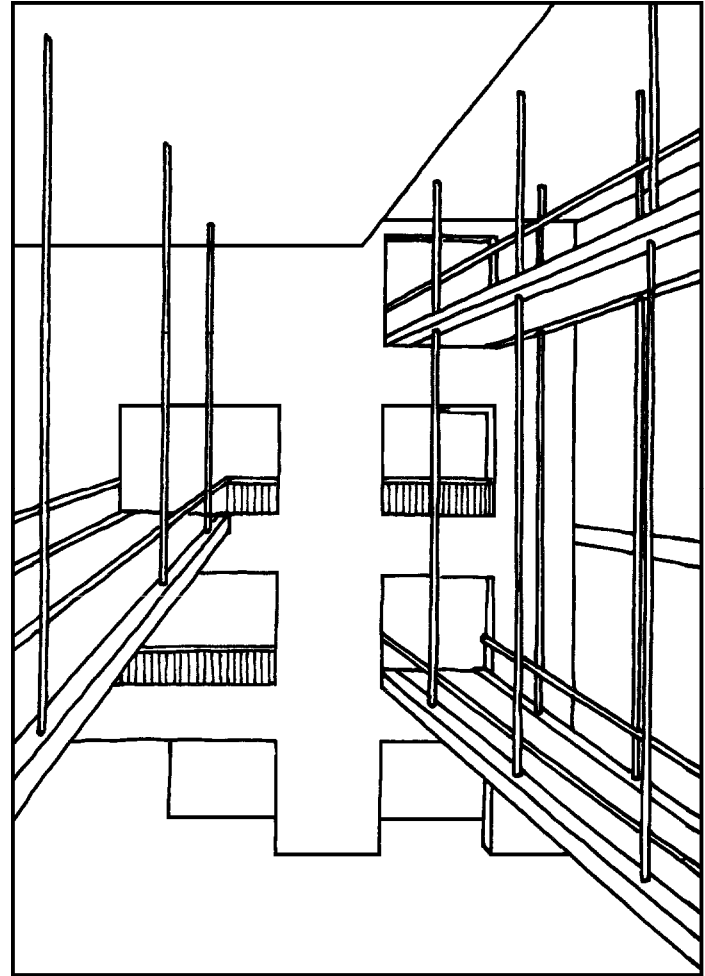
Real Architecture: A Lesson

Architectural Disasters

**Worst Structural Failure in US:
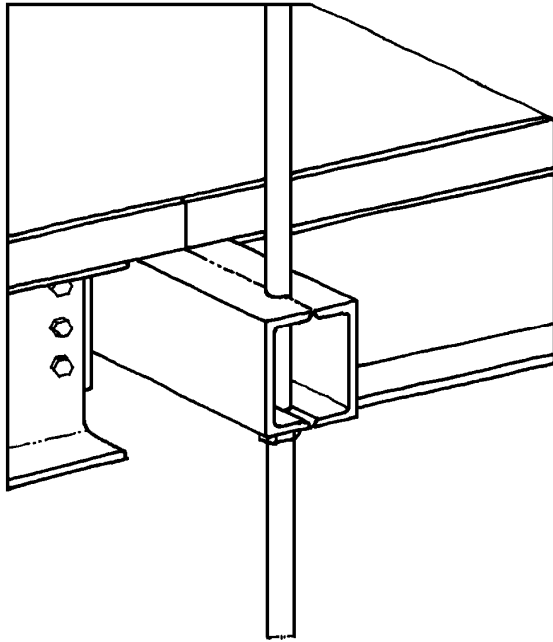Kansas City Hyatt Regency
17 July 1981**

Architectural Disasters

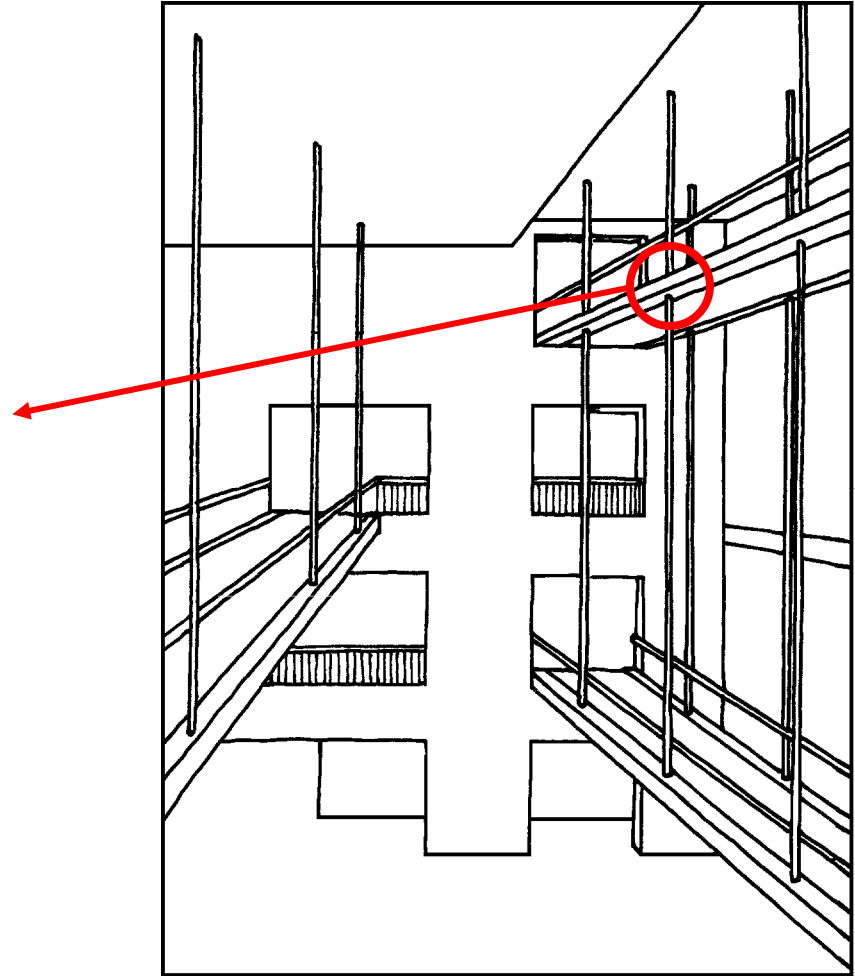**Design for the atrium of the Hyatt Regency Hotel, Kansas City, Missouri**

Architectural Disasters

As Designed

Architectural Disasters
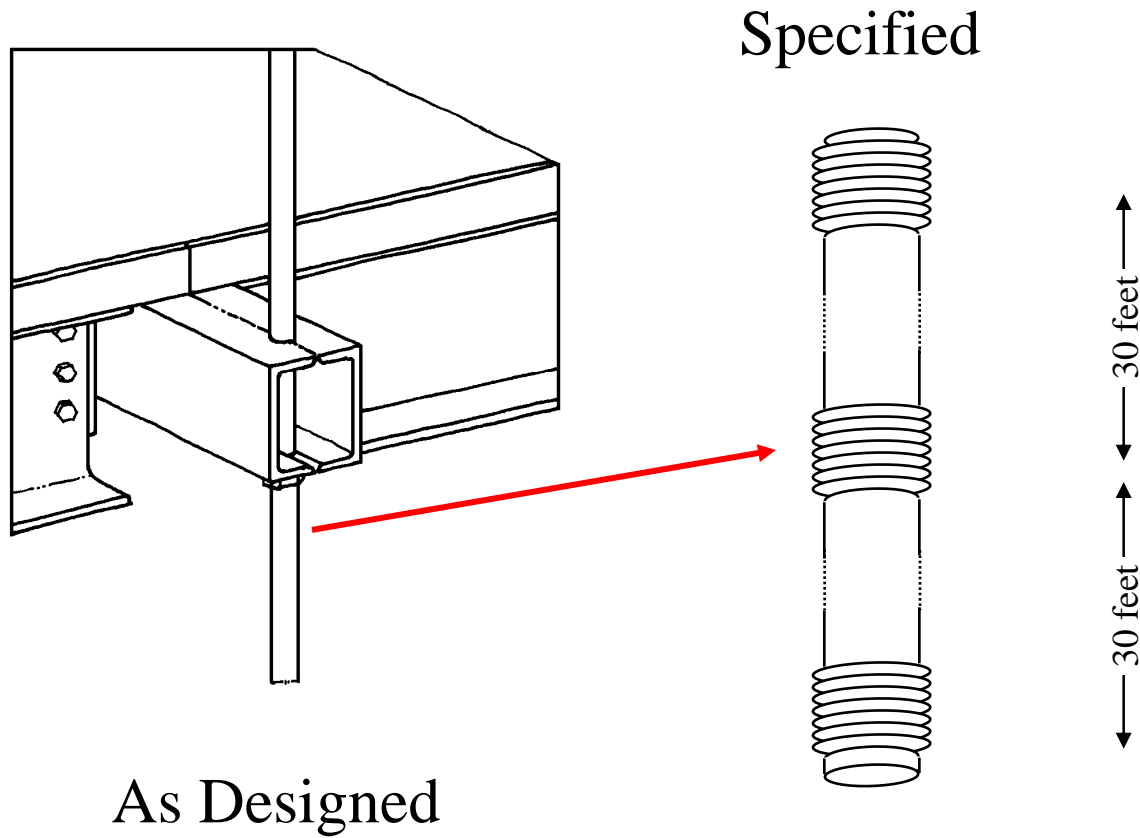
Specified

As Designed

30 feet

30 feet

Architectural Disasters

As Designed

Specified   Delivered
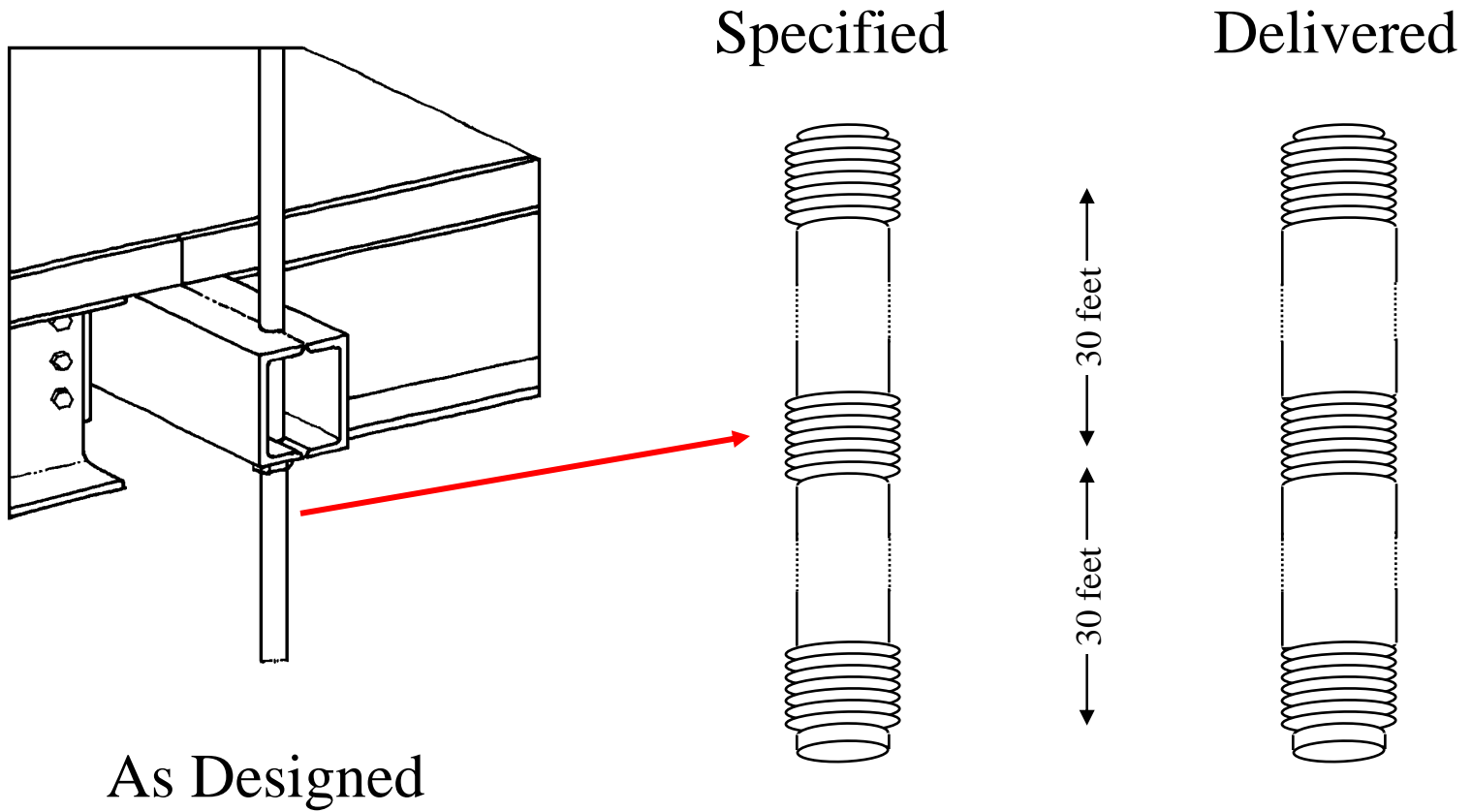
30 feet

30 feet

Now what?
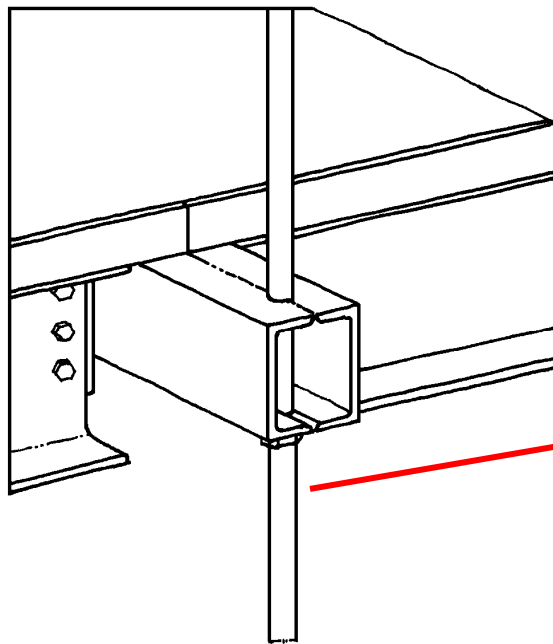
Specified   Delivered

30 feet

30 feet

As Designed
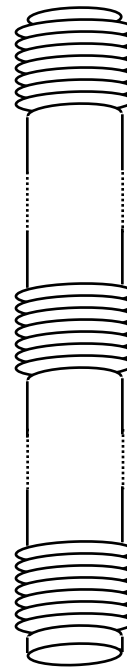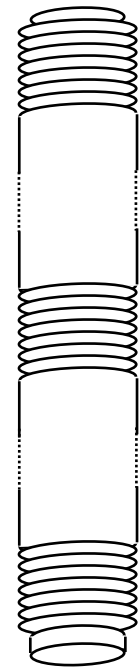
Architectural Disasters

Delivered

Apply hacksaw →

Architectural Disasters

Adjusted

As Built

Architectural Disasters

Hmmm…

Uglier than original design, but functionally equivalent, yes?
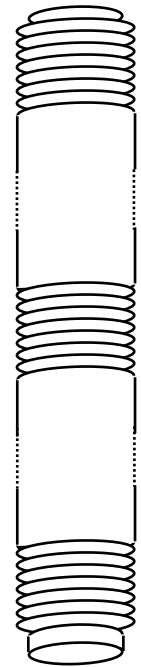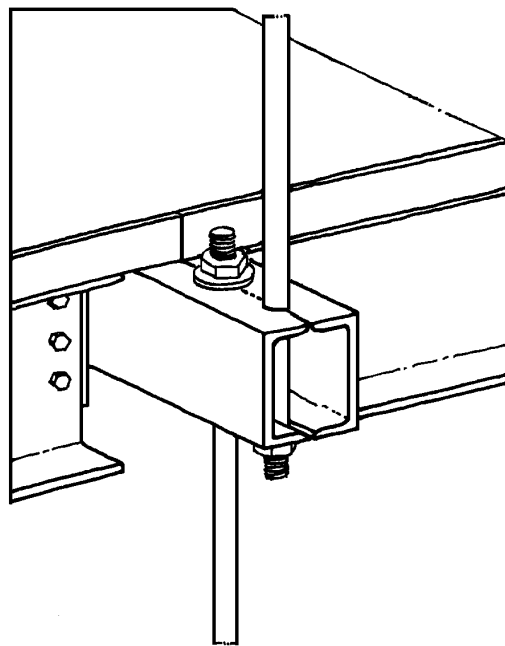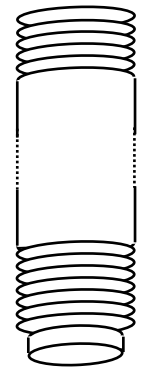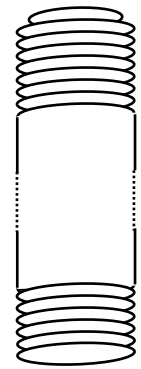
As Built

Architectural Disasters
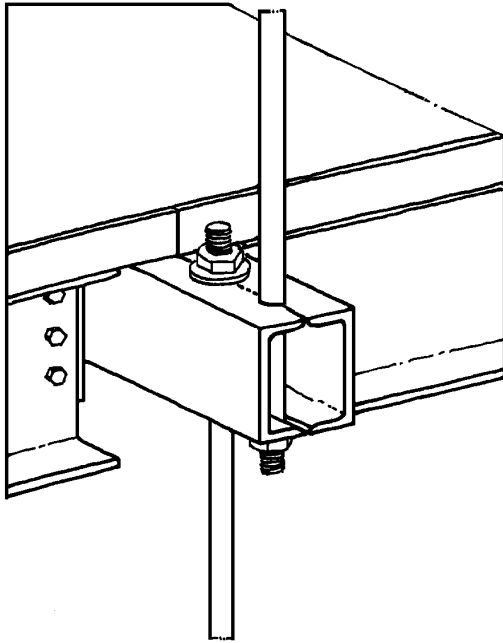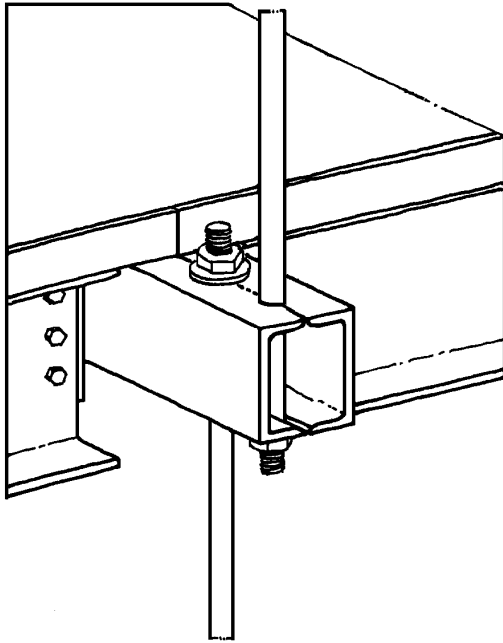
As Built

Hmmm…

Uglier than original design, but functionally equivalent, yes?

Not quite.

The beam on the top-floor walkway is now carrying the load of both the top and lower walkway.

Architectural Disasters

As Built

Result
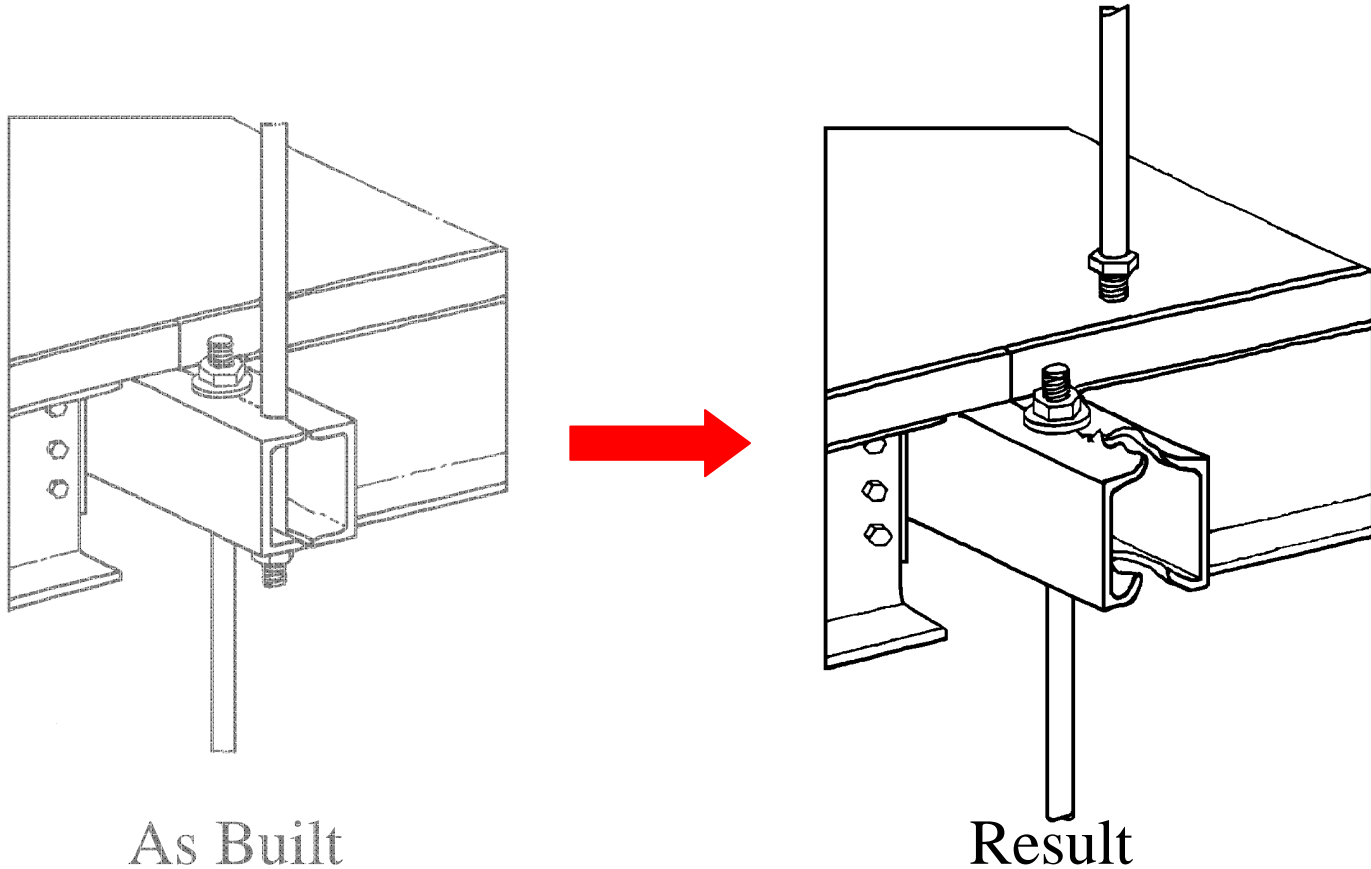
Architectural Disasters

The collapse of the walkways killed 114 people, injured 216 others.

The engineers employed by Jack D. Gillum and Associates who had approved the final drawings were convicted by the Missouri Board of Architects, Professional Engineers, and Land Surveyors of gross negligence, misconduct and unprofessional conduct in the practice of engineering; they all lost their engineering licenses in the states of Missouri and Texas and their membership with ASCE.

Jack D. Gillum and Associates lost its license to be an engineering firm.

Architectural Disasters

Lesson: each new design must be analyzed by the results of the latest theories *and* experimental investigations and a knowledge of structural theory should not be trusted beyond the limits of traditional structures proved safe by their age.

Levy, M., and Salvadori, M., 1987. *Why Buildings Fall Down.* New York: W. W. Norton & Co.

As Built

Result
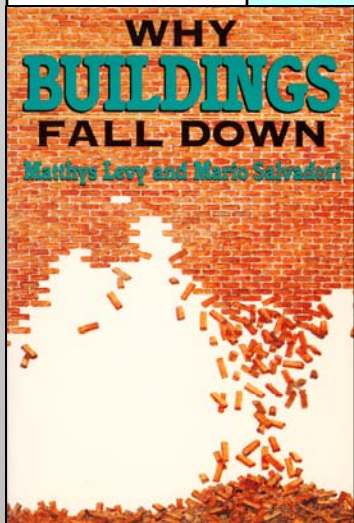
IT Architecture

Data

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Why the difference?

Architectural Disasters

Remember:

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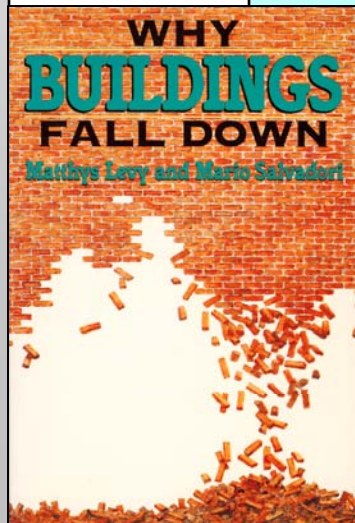
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As Built

Result

Architectural Disasters

Remember:

Lesson: each new design must be analyzed by the results of the latest theories *and* experimental investigations and a knowledge of structural theory should not be trusted beyond the limits of traditional structures proved safe by their age.

Unfortunately, IT doesn't last long enough to be "proved safe by age"…

Buildings Co.

sult
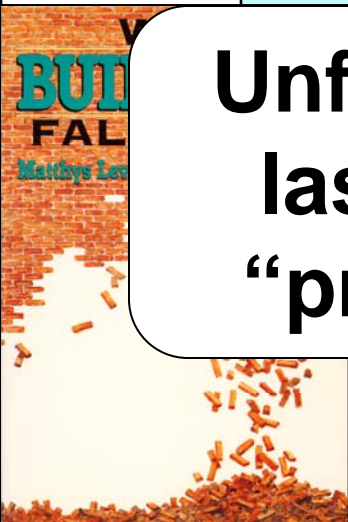
An Immature Field

Computer-based information technology is less than seventy-five years old.

- When accounting was that age, double-entry bookkeeping had not been invented.

- When civil engineering was that age, trigonometry had not been developed.

IT still needs its double-entry bookkeeping, its trigonometry.

IT Architecture – definition

An overall design describing how the components of an IT environment will work together, and with the rest of the enterprise, to achieve the goals of the organization, both now and in the future.

Complete IT architecture will include a governance process for decision making, multi-year planning for ensuring continuity, and will cover the physical plant in which IT is housed and functions, as well as specifications and designs for hardware, software, and data.

Good IT architecture will be designed to evolve, both socially and technically, and will be based upon realistic goals and constraints.

Successful IT architecture will be embedded in the operating processes of the enterprise and will be the joint creation of IT and general enterprise leadership.

R. Robbins (distillation)

Technology @Berkeley
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Home > Enterprise Architecture > Information Technology Architecture Committee (ITAC)

Information Technology Architecture Committee (ITAC)

Enterprise Architecture

▶ Information Technology
   Architecture Committee
   (ITAC)

   Charter

   Governance

   Membership

ITAC develops and maintains enterprise architecture roadmaps related to information, business processes, applications, and technology infrastructure. It also reviews specific information technology designs and funding proposals against these roadmaps to assure alignment with the campus enterprise architecture.

This is ITAC's public site. Information presented on this site has been approved by the Committee for broad dissemination. Work in progress, including enterprise roadmaps for information architecture, business process

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🖶 Printer Friendly View

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Architectural Schedules

Phase IV-A: Administrative Office Building
Project Schedule

FRED HUTCHINSON CANCER RESEARCH CENTER

ID	Task Name	2000	2001	2002
1	**Design**			
2	Program Planning	7/5 — 10/1		
3	Prepare document submittal	7/12 — 9/10		
4	Geotechnical and Environmental Study	11/1 — 12/17		
5	Schematic Design	10/25 — 12/17		
6	Design Development	12/20 — 3/3		
7	Construction Documents	3/6 — 6/16		
8	**Entitlements / Permits**			
9	Design Review- Guidelines Meeting	◆ 9/14		
10	Transportation Study	8/30 — 9/24		
11	Submit MUP and EIS Addendum	10/18 ◆		
12	MUP Review	10/18 — 7/7		
13	Shoring and excavation Permit	3/6 — 7/21		
14	Building Permit	6/19 — 10/6		
15	**Construction**			
16	Bid			
17	Demolition / Site remediation	8/1 — 9/25		
18	Construction	9/26 — 12/31		
19	**Commissioning / Move**		1/1 — 3/1	

Architectural Schedules

Phase IV-A: Administrative Office Building
Project Schedule

DESIGN

CONSTRUCTION

FRED HUTCHINSON CANCER RESEARCH CENTER

ID	Task Name		2000	2001	2002
		M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M
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Open Questions

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- How should IT architecture relate to IT operations? Wholly independent? Completely embedded? Something else?

- How should IT architecture relate to IT governance and to project management?

- Can IT architecture be implemented without IT governance?

- How critical is executive-level support for success of IT architecture?

- Are there best practices for IT architecture at BRIITE institutions?

Open Questions

- How relevant is the practice of "real" architecture to IT architecture?

- Is it possible to maintain coherent architectural standards in the face of rapid technological change.

- To what extent does IT architecture = IT standards?

- What are significant risk factors when implementing a formal approach to IT architecture?

Open Questions

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WELCOME