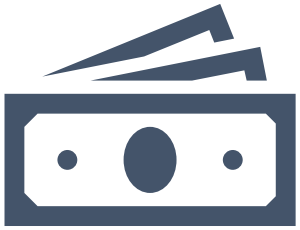
Examining Functional Obsolescence & Excess Capital Costs

- Presenters:
- - Jeff Grad, CPA, CA, CBV, MRICS, AACI
- Pat Budd, MIMA, AACI, P.App

Agenda



Functional Obsolescence

Excess Capital Cost

- Examples of dated vs current construction
- Sample Case Study

Cost Approach

- “Determines” market value by deducting all forms of obsolescence - physical, functional (in the forms of excess operating and maintenance costs) and economic from RCN or Replacement Cost New

Cost Approach

The Two Paths for a Cost Approach:
Path 1:
Reproduction Cost New
Less: Excess Capital Cost (Functional Obsolescence)
Replacement Cost New
Less: Physical Deterioration
Less: Excess Operating Costs (Functional Obsolescence)
Less: Economic Obsolescence
Equals Fair Market Value of Improvements

Cost Approach

- <u>Path 2:</u>

- Replacement Cost New
- Less: Physical Deterioration
- Less: Excess Operating Costs (Functional Obsolescence)
- Less: Economic Obsolescence
- Equals Fair Market Value of Improvements

Today, we focus on:

Functional Obsolescence

Functional Obsolescence

Results from changes in demand , design, and technology - may take form of deficiency, modernization, or superadequacy

Deficiencies: Property requires additions to adequately fulfill required functions, e.g., an additional runway or pollution control facility

Superadequacies: Overbuilding, e.g., excess and unused floor space, or excess height

Functional Obsolescence

- **How Quantified?**
  - Excess Capital Costs
  - Excess Operating Costs
  - Cost to Cure
- Today we focus on excess capital costs

Functional Obsolescence

- Purchaser has two choices:
    - (1) Buy what exists, or
    - (2) Construct modern state of the art facility built in market
- *Principle of substitution*: no rational person pays more for existing property than what it costs to build most economical improvements of equal utility

Functional Obsolescence

Taxpayers are confronted with what constitutes an appropriate replacement facility

The choice of a replacement facility applies market realities of design, construction, materials, layout and technology changes

Thus, the valuer must analyze what is being built in the marketplace that accommodates similar utility.

Functional Obsolescence

- The facilities being built are likely the most economical improvements which have similar utility to the subject property

- Simply, the Replacement facility captures functional obsolescence due to excess capital cost as it seeks to replicate the utility of the subject property while contemplating the physical composition of modern building principles.

- That's IT!

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

Building Techniques

- **Modern buildings**

  exterior wall - insulated precast concrete panels or insulated metal panels

  roof - built up or elastomeric; OWSJ or trusses

  height - 35'+/-

  structural framing – steel; bay grid - >-1,600 square feet

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

Building Techniques

- **Modern buildings**

  mechanicals - suspended gas units, air conditioning and/or ventilation in areas as required; fire protection; energy efficient time & motion monitored lighting; building security

  offices as required for administrative support, often specific to use

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

Building Techniques

- **‘Ancient & Royal’ buildings aka**

‘antiquated and costly’

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

Building Trends over the past 100 years

exterior walls

pre 1950 - solid masonry - double or triple row brick; substantial fenestration

post 1950 to 1980 – brick on block; introduction of transite siding leading to insulated metal panels; a movement to a mix of masonry and metal siding

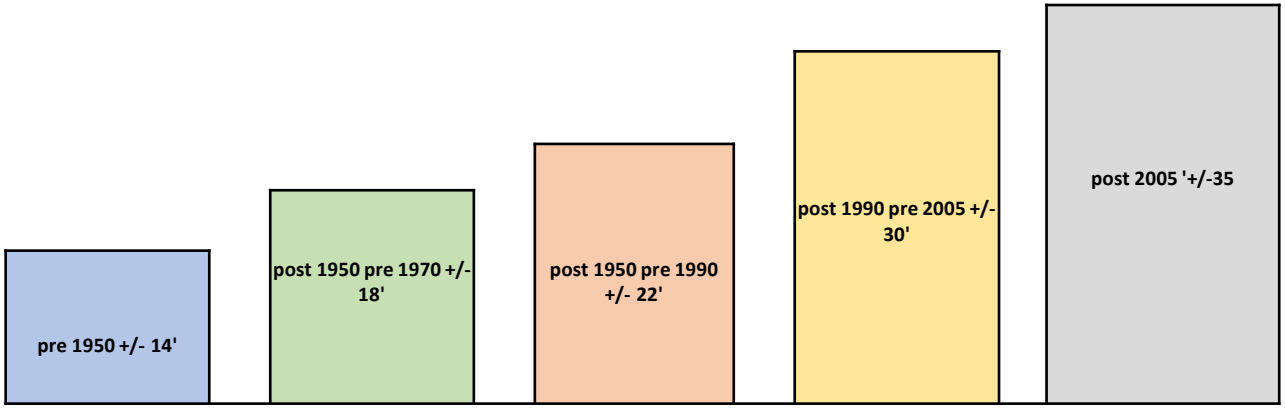
post 1980 to 2000 & beyond – insulated metal panels; insulated precast concrete panels

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

Building Trends over the past 100 years

roof -	pre 1950 - wood deck on wood joists	
	post 1950 – OWSJ or trussing; some concrete framing	
height -	pre 1950	12 to 14’ +/-
	post 1950 to 1970	18’ +/-
	post 1970 to 1990	20’ +/-
	post 1990 to 2010	30’ +/-
	post 2010	35’ +/-

HEIGHT TREND - prehistoric days to present



ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

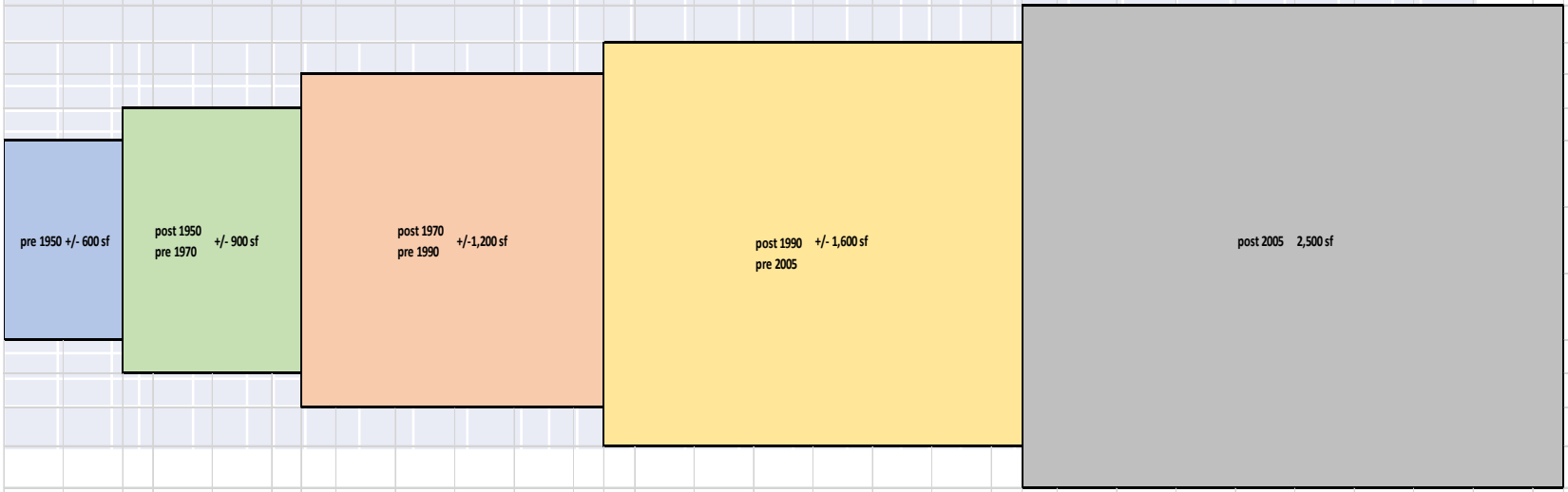
Building Trends over the past 100 years

structural framing – steel (some concrete framing) ;

bay grid

pre 1950	+/- 600 square feet
post 1950 to 1970	+/- 900 square feet
post 1970 to 1990	+/- 1,200 square feet
post 1990 to 2010	+/- 1,600 square feet
post 2010	+/- 2,000 to 2,500 square feet

BAY GRID TREND - prehistoric days to present



ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

Building Trends over the past 100 years

- **'Ancient & Royal' buildings**

  mechanicals – heating - suspended units – steam fired, eventually advancing to gas fired units; air conditioning and/or ventilation slowly introduced through time; fire protection introduced through time; lighting – incandescent, eventually fluorescent, mercury vapor, sodium vapour; (many old buildings incorporated monitor roofs or window ribbons to allow light into the plants); security systems introduced late 1990's early 2000's

  offices as required for administrative support, often specific to use; office ratio was higher in the past since administrative functions remained manual and intense compared to modern standards

1920’s

Mid 1920’s

Mid 1920’s

Mid 1950’s

Late 1960’s

Mid 1980’s

Mid 1990’s

Mid 1990’s

Mid 1990’s

Mid 2000’s

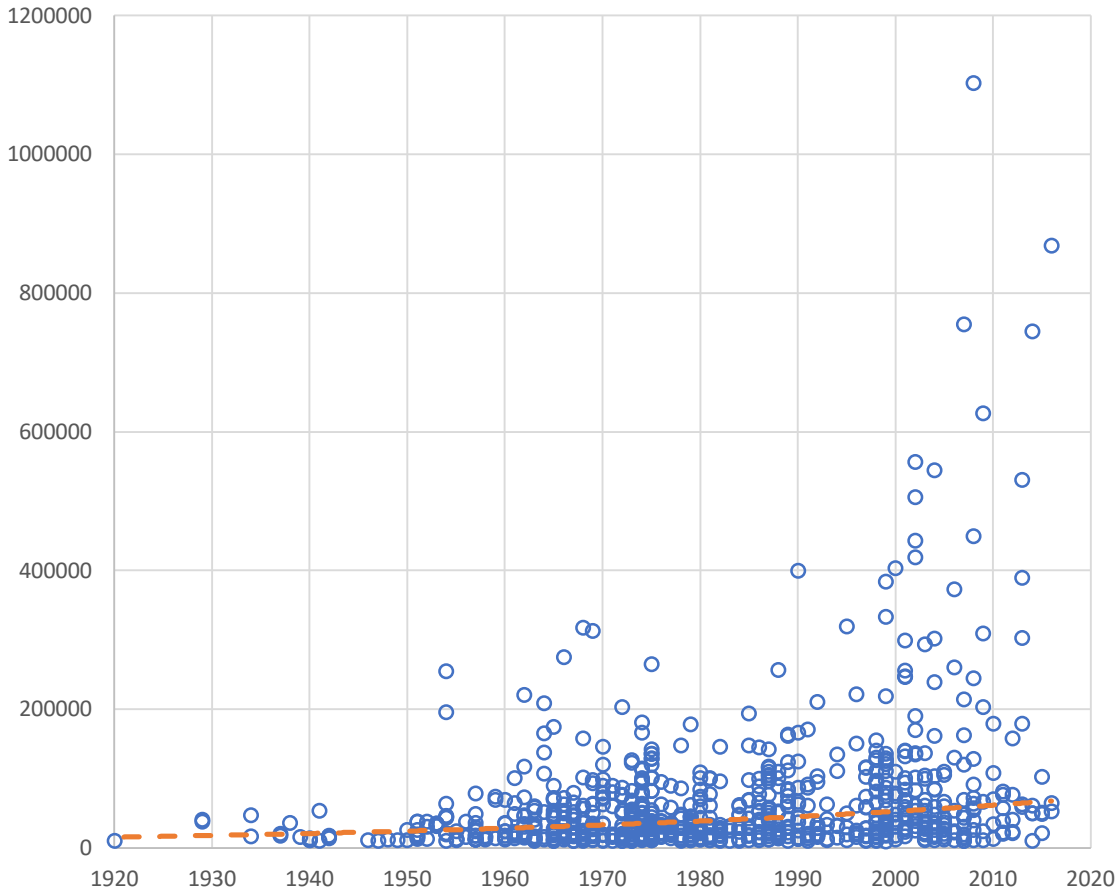
Mid 2000's

Last 5 years

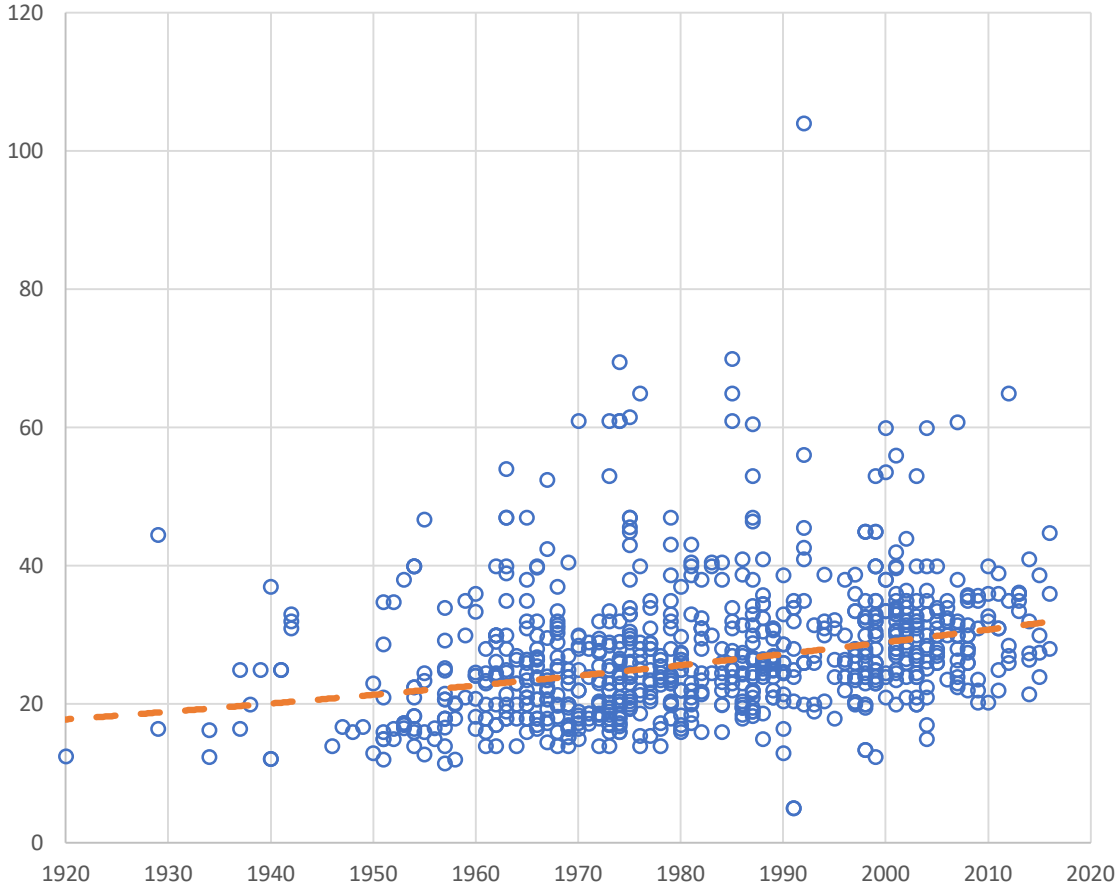
Last 5 years

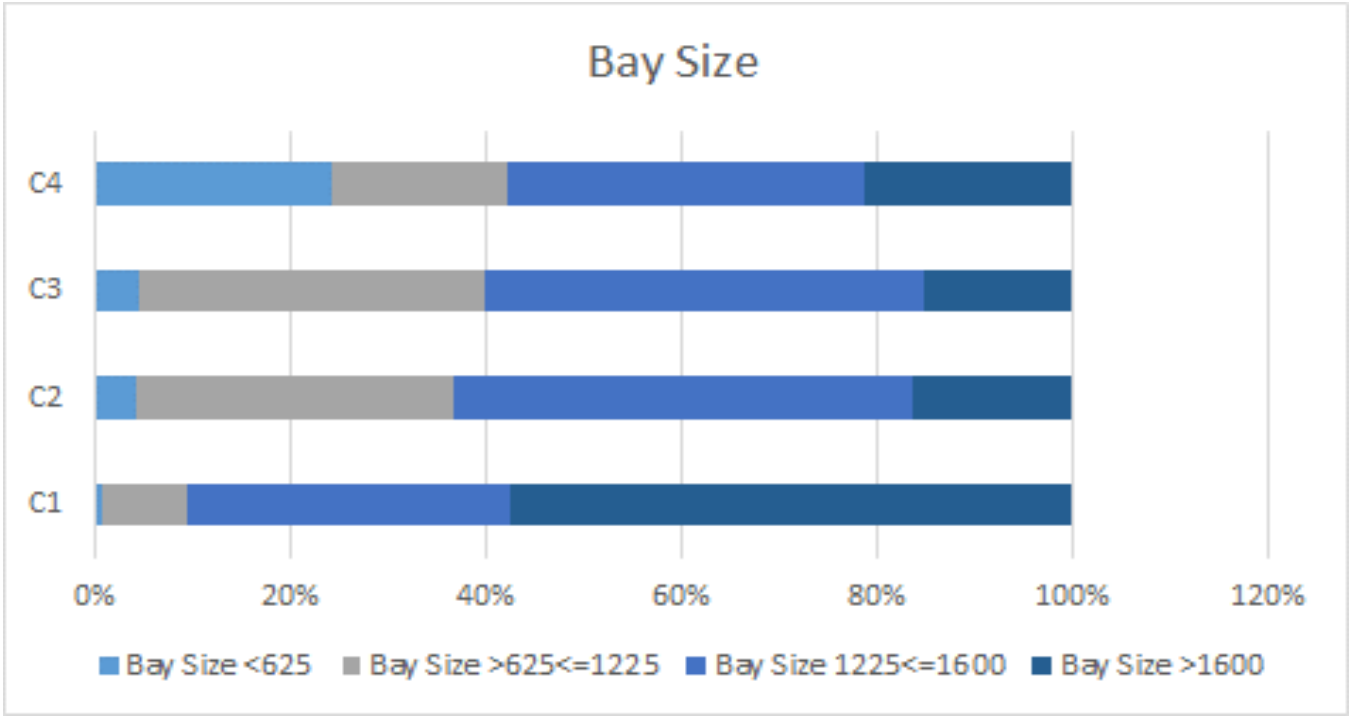
Last 5 years

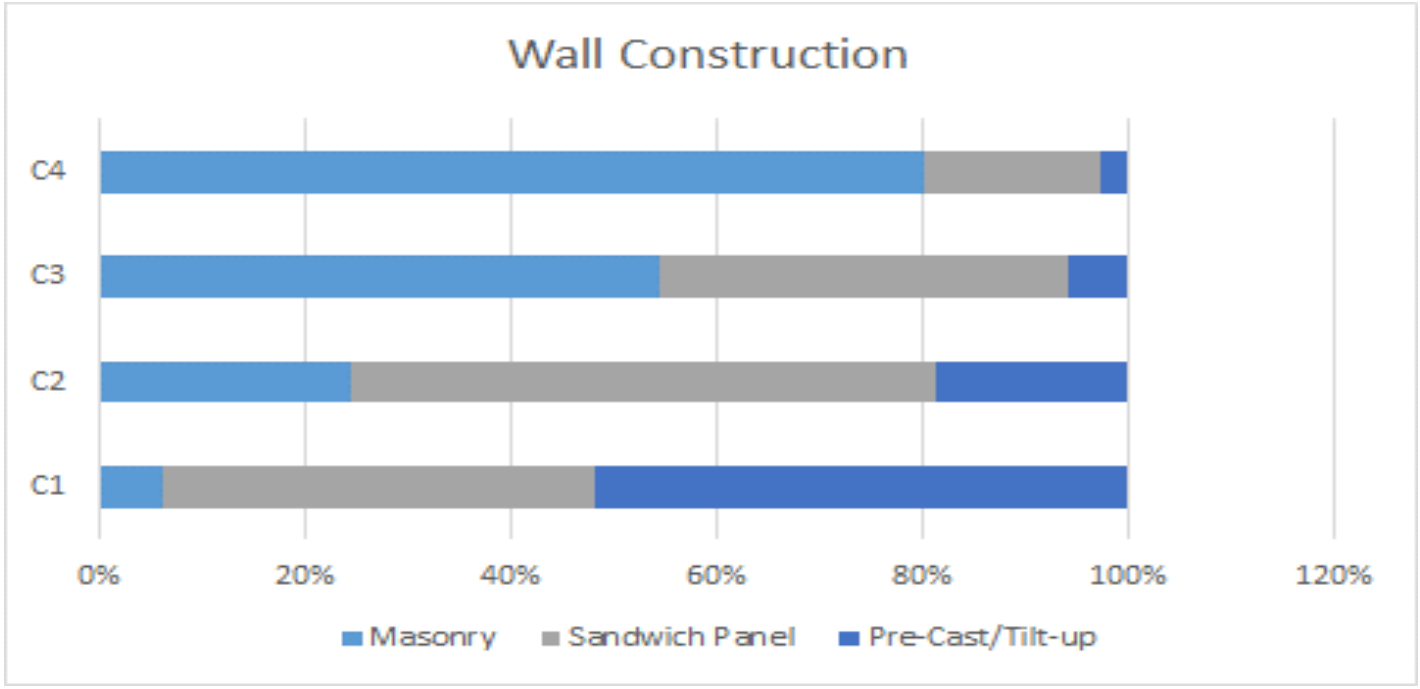
Structure Size by Year Build



Structure Height by Year Build




Bay Size
C4
C3
C2
C1
0%
20%
40%
60%
80%
100%
120%
Bay Size <625
Bay Size >625<=1225
Bay Size 1225<=1600
Bay Size >1600


Wall Construction
C4
C3
C2
C1
0%
20%
40%
60%
80%
100%
120%
Masonry
Sandwich Panel
Pre-Cast/Tilt-up

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

And, this leads us to the point of identifying areas of inutility and quantifying functional obsolescence, both curable and incurable i.e.

- superadequacy of exterior walls
- inadequacy of bay sizes
- inadequacy of heights
- inadequacy/inefficiency of lighting
- inadequacy/inefficiency of heating
- superadequacy of interior offices

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

What is prevalent, property and area-wise and with modern construction techniques?

- superadequacy of exterior walls
  - Say you have a building that's block and brick (old methodology)
    - Rate is $12.93 for concrete block + $20.44 for brick = $33.37
    - Rate for pre-cast tilt up 8" insulated = $25.05
    - Rate for 4" sandwich panel = $14.47

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

What is prevalent, property and area-wise and with modern construction techniques?

- inadequacy of bay sizes
  - Issue relates to required steel to support structures, need to consider the type of building and what it could be used for (market review), consider the nature, composition/use case and location of the building
    - heavy steel (21' ht/100,000 sf/1,600 sf bay) $23.12
    - medium steel (21' ht/100,000 sf/1,600 sf bay) $19.02

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

What is prevalent, property and area-wise and with modern construction techniques?

- inadequacy/inefficiency of lighting, consider use of property and similar properties nearby
  - T4 lighting
  - T8 lighting
  - LED lighting

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

What is prevalent, property and area-wise and with modern construction techniques?

- Roof composition
  - A four ply built up roof with 3” insulation is $7.98 + $3.30 = $11.28
  - An elastomeric roof is $6.28 plus insulation = $9.58

ASSESSING EXCESS CAPITAL COSTS: INDUSTRIAL PROPERTIES

And, this leads us to the point of identifying areas of inutility and quantifying functional obsolescence, both curable and incurable i.e.

- superadequacy of areas – piecemeal construction – consider model facility

Functional Obsolescence

- An erroneous replacement facility overstates construction costs and understates excess construction costs; thereby, overstating value

CASE STUDY

To be provided

Questions?