

Facing Reality

2018 and Beyond



Mr. John Cross, P.E.

02-May-2018

Myths and Realities



Economic Conditions

Competing Materials

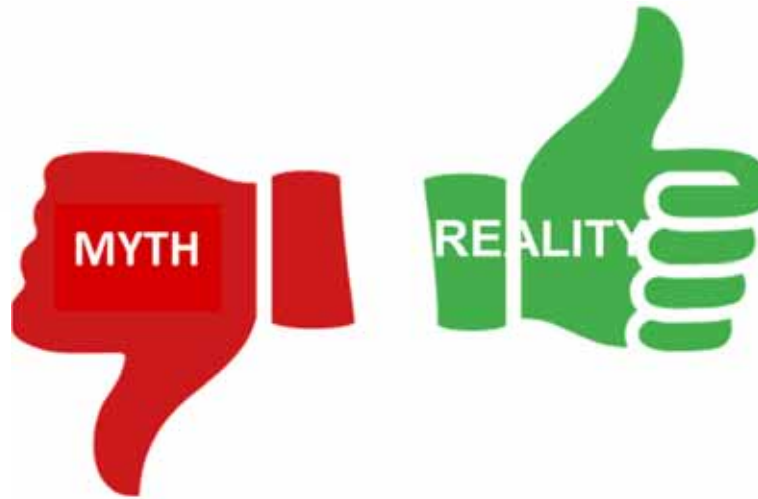


Tariffs

National Markets

Local Markets

Is it a myth or a reality?



Is it a myth or a reality?



Napoleon was short



Is it a myth or a reality?



Einstein failed math



Is it a myth or a reality?



**The left side of the brain controls logic,
the right side controls creativity**



Is it a myth or a reality?



Alcohol keeps you warm



Is it a myth or a reality?



Ohio has a different color license plate for DUI offenders



Is it a myth or a reality?



Otters sleep holding hands



Is it a myth or a reality?



**The Pentagon has a plan in place
if it is attacked by zombies**



Is it a myth or a reality?



The next Comcast Tower in Philadelphia might be built out of wood



Comcast Tower #3



VOICE NEWS HEALTHY CULTURE EVENTS SPORTS
APRIL 23, 2018

D.C. architects want to build a timber skyscraper in Philadelphia

Innovative firm wants Comcast to pick up sustainable project for rumored third tower in Center City

By MICHAEL TANENBAUM
PhillyVoice Staff

Architecture by Anne S. Koop

Rendering of Timber Towers prototype, a project drawn up between Arch and Cherry Streets and 15th and 20th Streets

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

2018 American Steel News 2018 Chicago, IL 60601
www.aisc.org

We read your recent article in the Philly Voice (D.C. architects want to build a timber skyscraper in Philadelphia - April 21) with great interest and would like to correct some of the information.

Your article is the most environmentally friendly material for construction. From its amazing thermal content (greater than 50%), to its reduced greenhouse gas emissions, to its minimal water consumption, steel construction is synonymous with green building design. For more information on steel's sustainable attributes, visit www.aisc.org/sustainable.

Second, steel need to be very cautious before seeking high-rise construction. Request the steel to the upper floor about sustainable. The article claims with CLT. These steel (steel) were supported in the wood (steel) allowed that contrary to better design. CLT is subject to buckling and deformation under the product contributes more to the potential. The steel that was previously thought.

From there are sustainable steel issues that need to be considered. www.aisc.org, www.aisc.org and www.aisc.org are the steel's most sustainable attributes. For the interests of American C.L.T. is a new product, steel, put up to more steel. It is a new, heavy in the market. The material was not locally sourced and there was manufacturer in America.

If you'd like to discuss the issue in greater detail or would like reports, or see with photos of the steel.

Thank you for your interest in steel.

Is it a myth or a reality?



Using wood reduces global warming



The reality is -



Using wood contributes to global warming



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Programs and Policies of the Office of Air and Radiation

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EPA's Treatment of Biogenic Carbon Dioxide Emissions from Stationary Sources that Use Forest Biomass for Energy Production

Is it a myth or a reality?



All wood is sustainable



The reality is -



Only 14% of US forests are managed and harvested sustainably



Is it a myth or a reality?



A new tree consumes as much CO2 as a mature tree



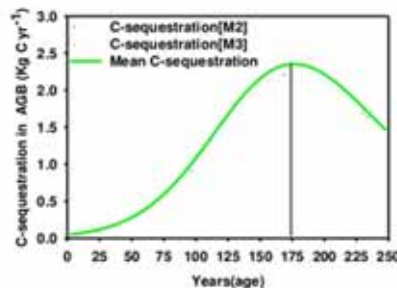
The reality is -



Mature trees sequester 50 times more carbon every year than young trees

Mean annual C-sequestration rate per tree

• The mean annual C-sequestration rate: 1.12 (± 0.05) kg C tree⁻¹ yr⁻¹.



Is it a myth or a reality?



All wood is the same



The reality is -



Every species of wood has distinct properties that vary greatly

Tree Species	Average Specific Gravity, Oven Dry Sample	Static Bending Modulus of Elasticity (E)	Impact Bending: Height of Drop Causing Failure	Compress. Parallel to Grain: Max Crushing Strength	Compress. Perpen. to Grain: Fiber Stress at Prop. Limit	Shear Parallel to Grain: Max Shear Strength
	(0-1.0)	10 ⁶ psi	inches	psi	psi	psi
U.S. Hardwoods						
Alder, Red	0.41	1.38	20	5,820	440	1,080
Ash, Black	0.49	1.60	35	5,970	760	1,570
Ash, Blue	0.55	1.40	-	6,990	1,420	2,030
Ash, Green	0.55	1.40	-	6,990	1,420	1,910
Ash, Oregon	0.55	1.40	-	6,990	1,420	1,790
Ash, White	0.60	1.74	43	7,410	1,160	1,910
Aspen, Bigtooth	0.39	1.43	-	5,300	490	1,080
Aspen, Quaking	0.38	1.18	21	4,250	370	850
Basswood	0.37	1.44	16	4,730	370	890
Beech, American	0.64	1.72	41	7,300	1,010	2,010
Birch, Paper	0.55	1.59	34	5,690	600	1,210
Birch, Sweet	0.65	2.17	47	8,540	1,080	2,240
Birch, Yellow	0.62	2.01	55	8,170	970	1,880
Butternut	0.35	1.18	24	5,110	460	1,170
Cherry, Black	0.50	1.49	29	7,110	690	1,700
Chestnut, American	0.43	1.23	19	5,320	620	1,080

> 400 species in US

Is it a myth or a reality?



Harvesting trees does not generate waste



The reality is -



64% of the biomass of a tree is discarded



Is it a myth or a reality?



Wood energy is green, renewable & clean



The reality is -



Wood energy is dirtier than coal

Figure 2: Even with modern emissions controls, biomass power plants emit more pollution than coal or gas

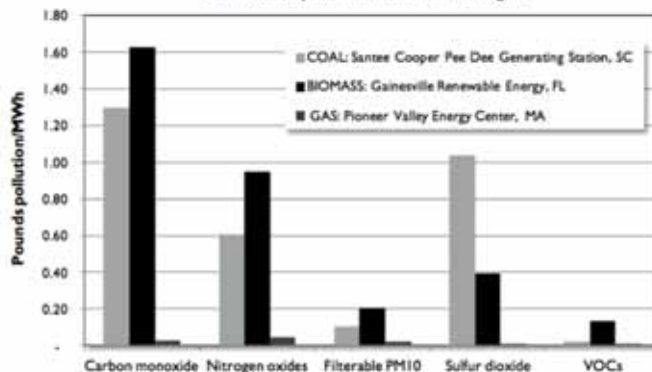


Figure 2. Allowable emission rates (in pounds per megawatt-hour) from three recently issued permits.¹⁷

Is it a myth or a reality?



Wood's environmental impact < steel

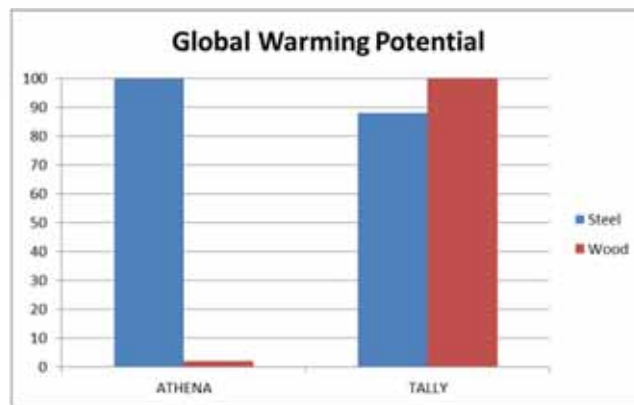
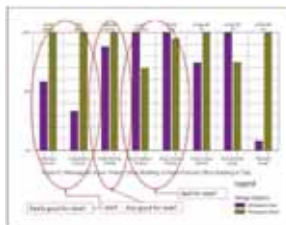


Illustration representing the myth & fact of these common building materials (smaller carbon footprint). Along with the volume of the carbon dioxide typically released to produce these materials (larger carbon footprint).

The reality is -



It depends on usage and assumptions



Is it a myth or a reality?



Wood doesn't burn – it chars



The reality is -



Wood burns, steel and concrete don't



Is it a myth or a reality?



Students learn better in wood buildings



The reality is -



Students learn better when wood is visible



Is it a myth or a reality?



The Empire State Building could be built in wood



The reality is -



No, column size, creep, combustibility



Is it a myth or a reality?



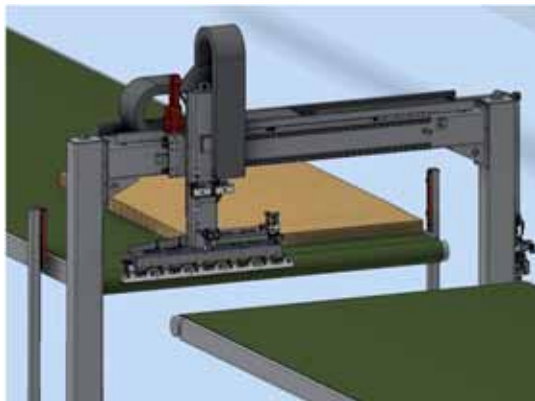
CLT is just another type of wood



The reality is -



CLT contains adhesives and can delaminate



Is it a myth or a reality?



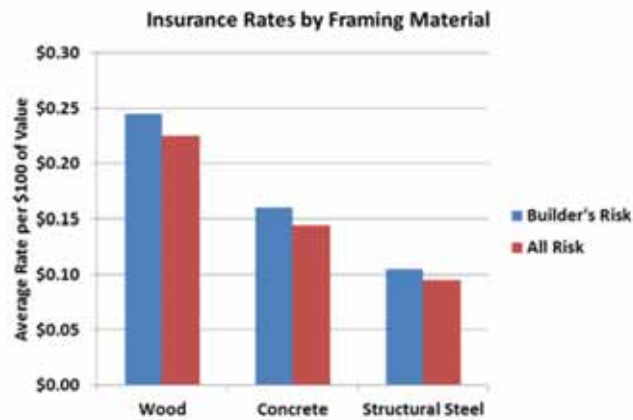
Wood buildings are resilient



The reality is -



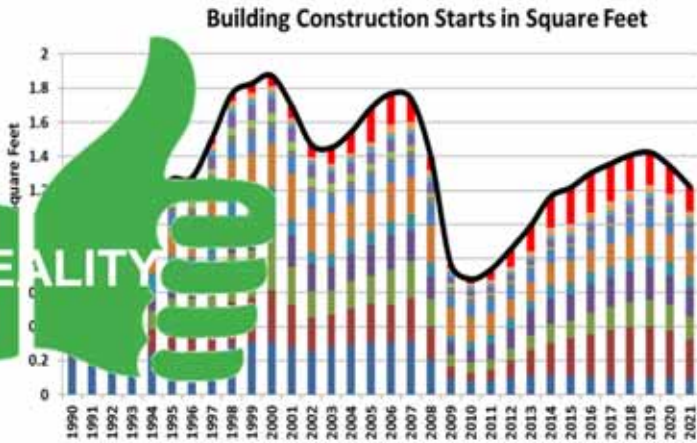
Not if you talk to insurance companies



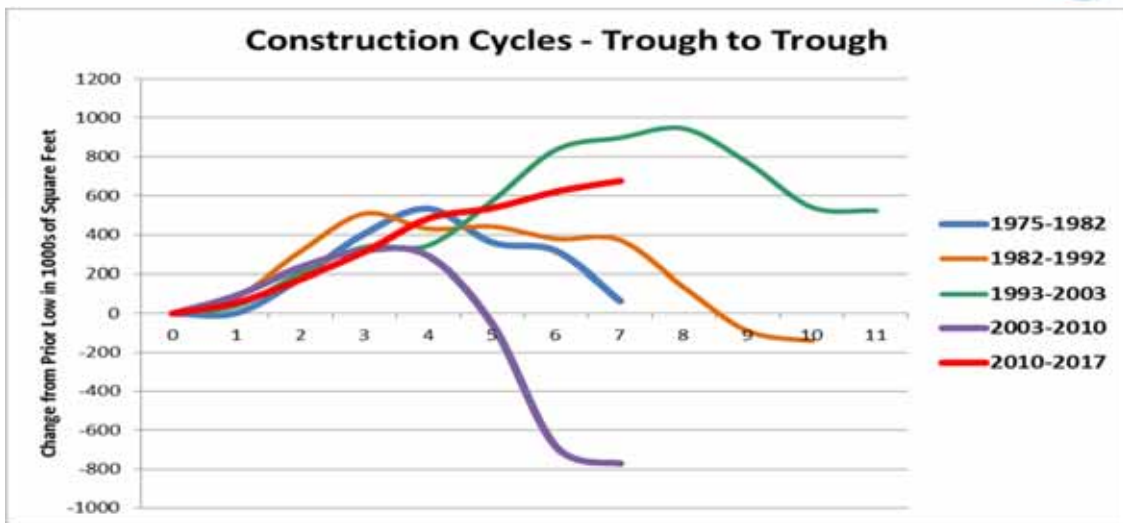
Is it a myth or a reality?



Construction activity is going to slow



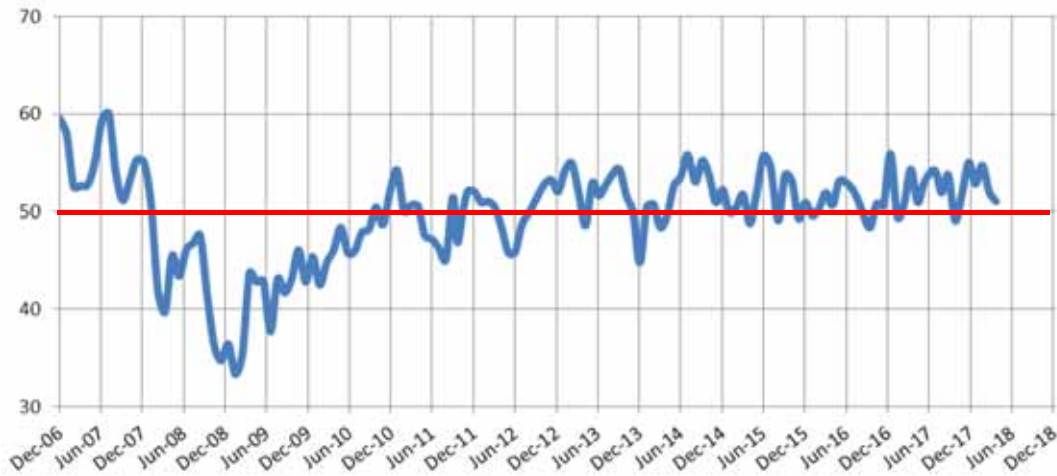
Construction Trends - Buildings



Construction Trends - Buildings



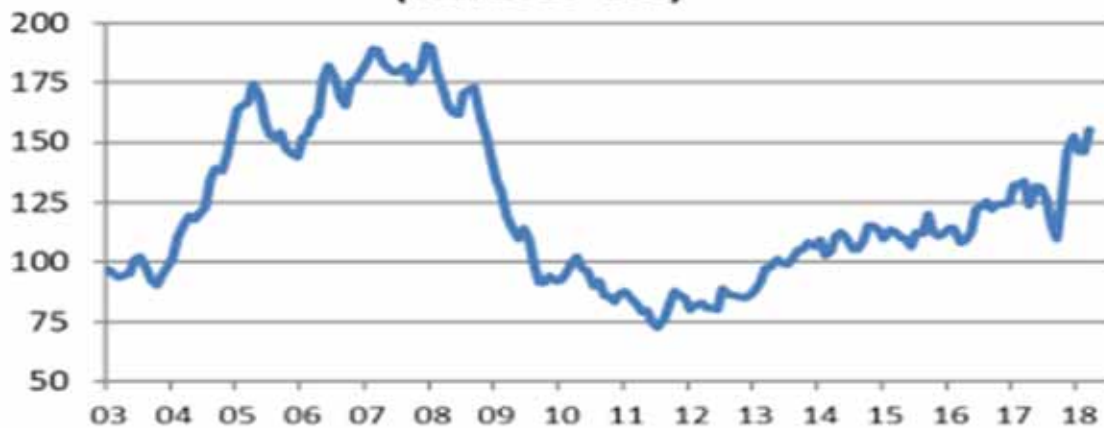
Architectural Billing Index (50 = no change)



Construction Trends - Buildings



Dodge Momentum Index (Year 2000=100)



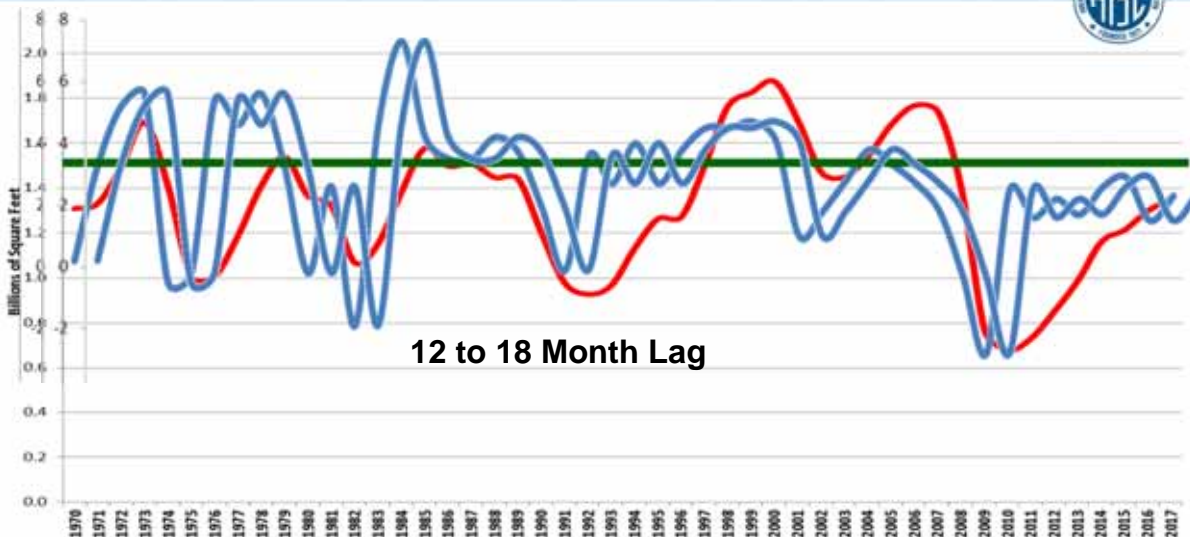
Construction Trends - Buildings



AISC Business Barometer - Optimism



GDP and Construction



Economic Trends - GDP



Annualized Contributions to GDP



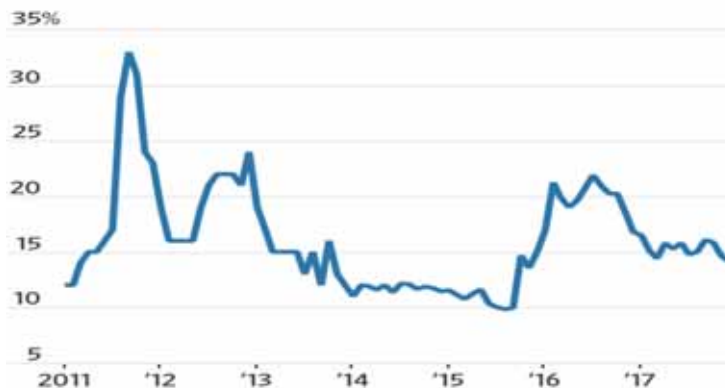
2017 2.4-2.5
 2018 2.2-2.6
 2019 1.9-2.3
 2020 1.7-2.0
 Long Term 1.8-1.9

Economic Trends - Recession



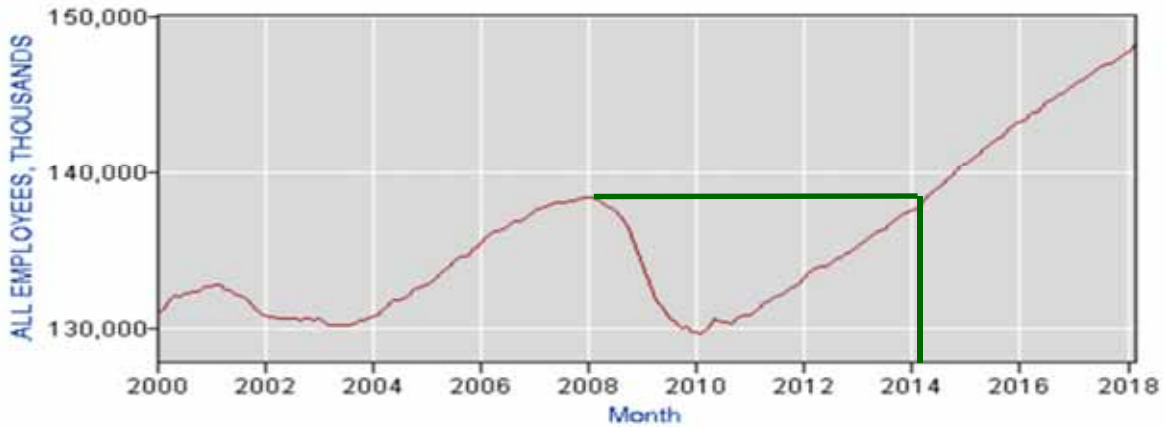
Recession Watch

Average probability of the U.S. being in a recession within 12 months



Source: WSJ Survey of Economists
 THE WALL STREET JOURNAL

Economic Trends - Employment



Labor Supply

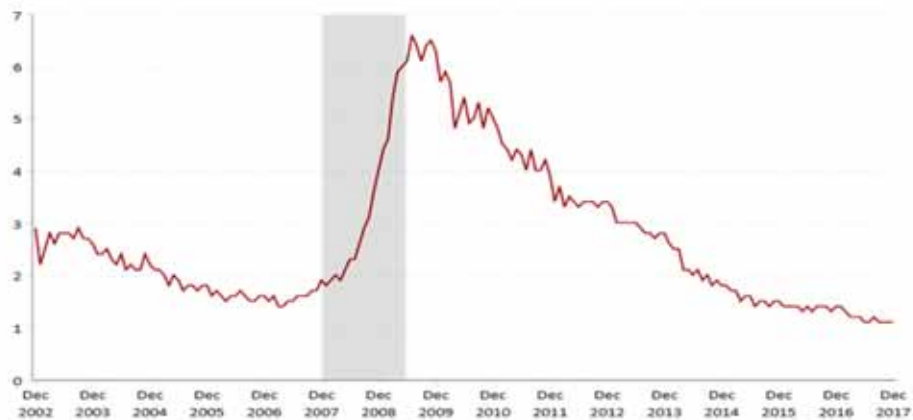


Labor Supply

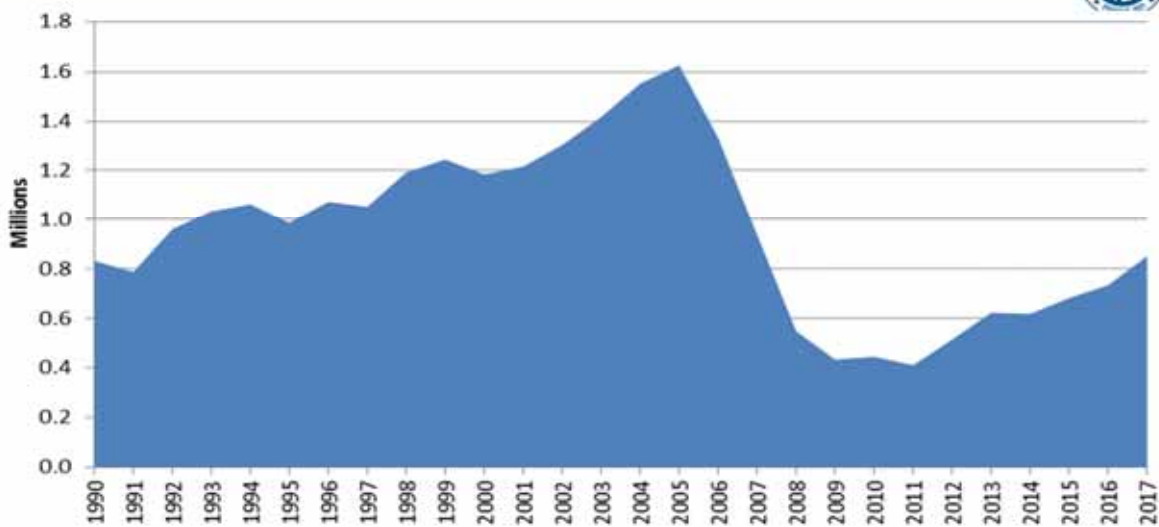


Number of unemployed persons per job opening, seasonally adjusted

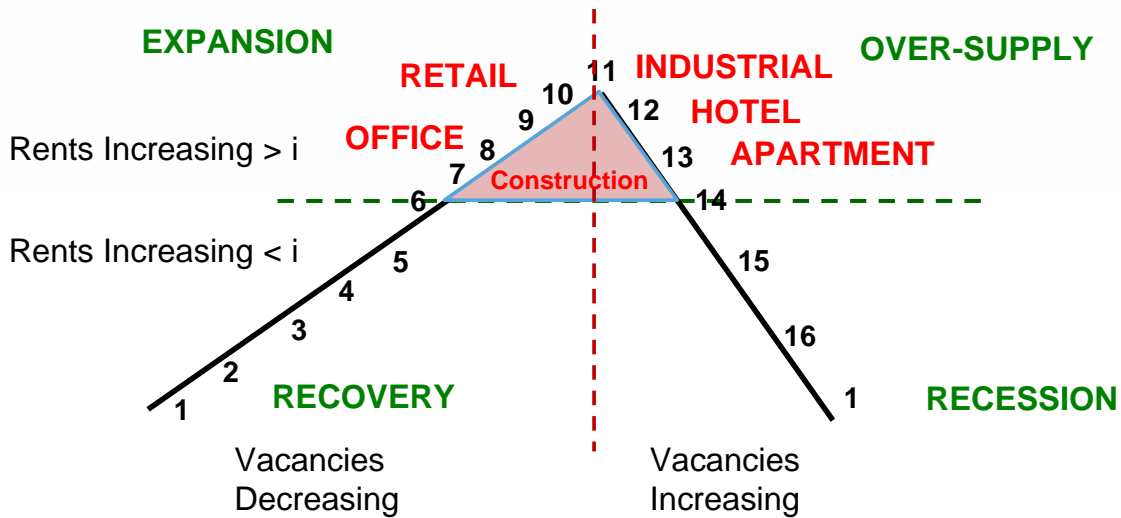
Click and drag within the chart to zoom in on time periods



Growth of Single Family Residential



Supply and Demand

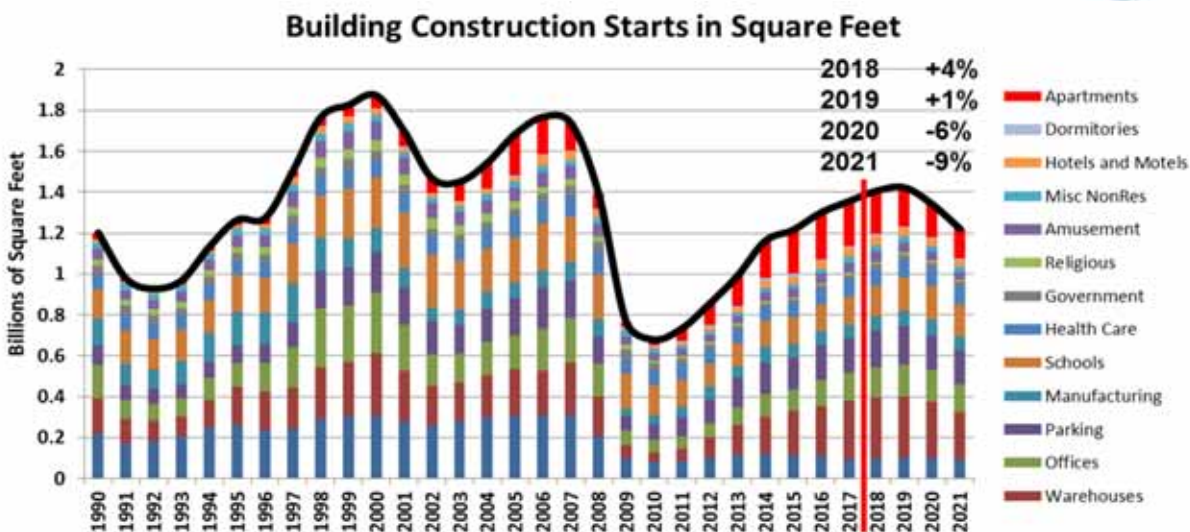


Growth and Decline of Residential

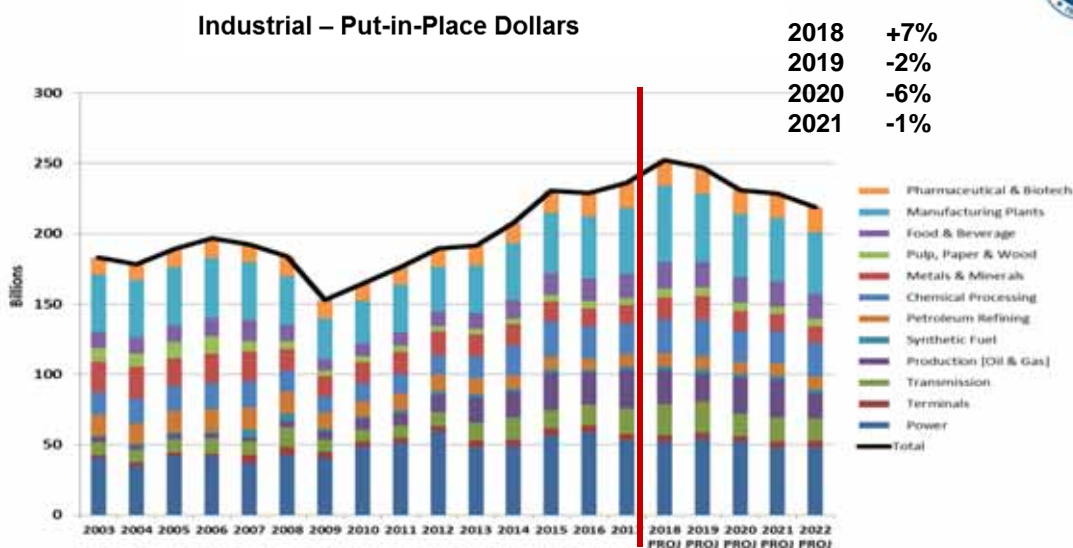


2017 up 4% over 2016
Non-Residential up 6% - Residential down 2%

Construction Forecast - Buildings



Construction Forecast - Industrial



Is it a myth or a reality?



Regional Activity will also decrease

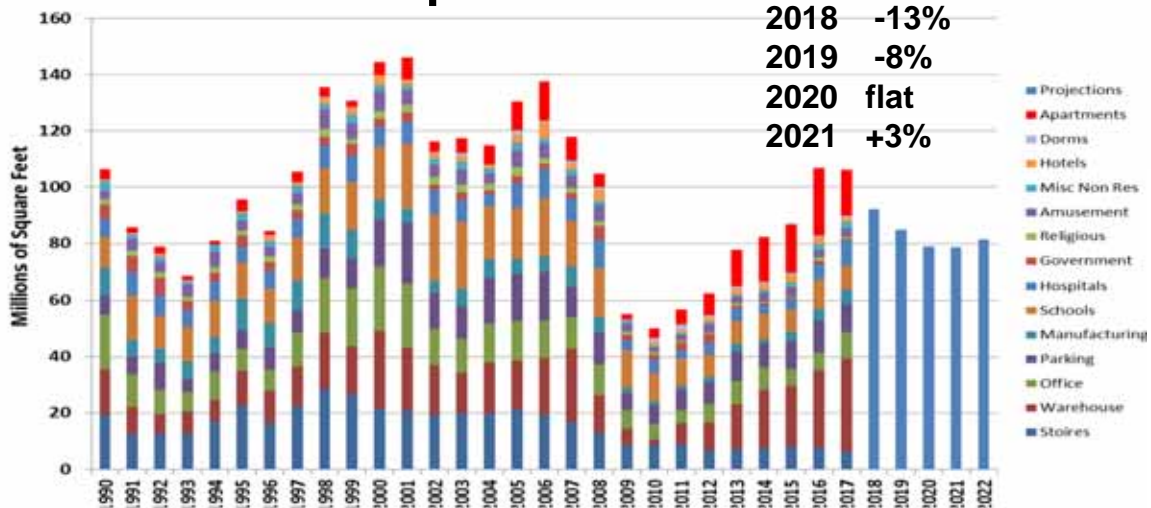


Construction Forecasts - Buildings



Mid Atlantic Square Feet

2017	Flat
2018	-13%
2019	-8%
2020	flat
2021	+3%



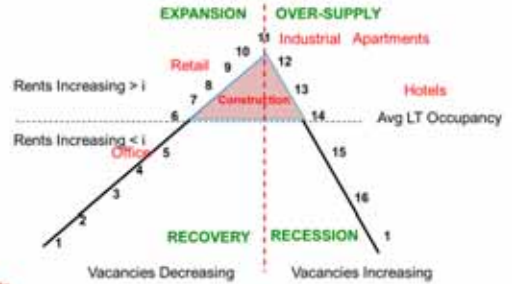
Supply and Demand



Philadelphia PA



Northern New Jersey



Pittsburgh PA



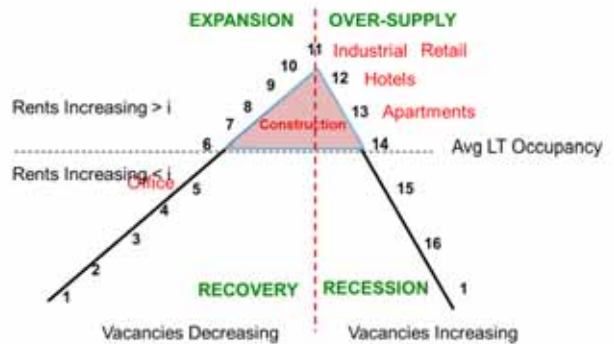
Supply and Demand



Baltimore MD



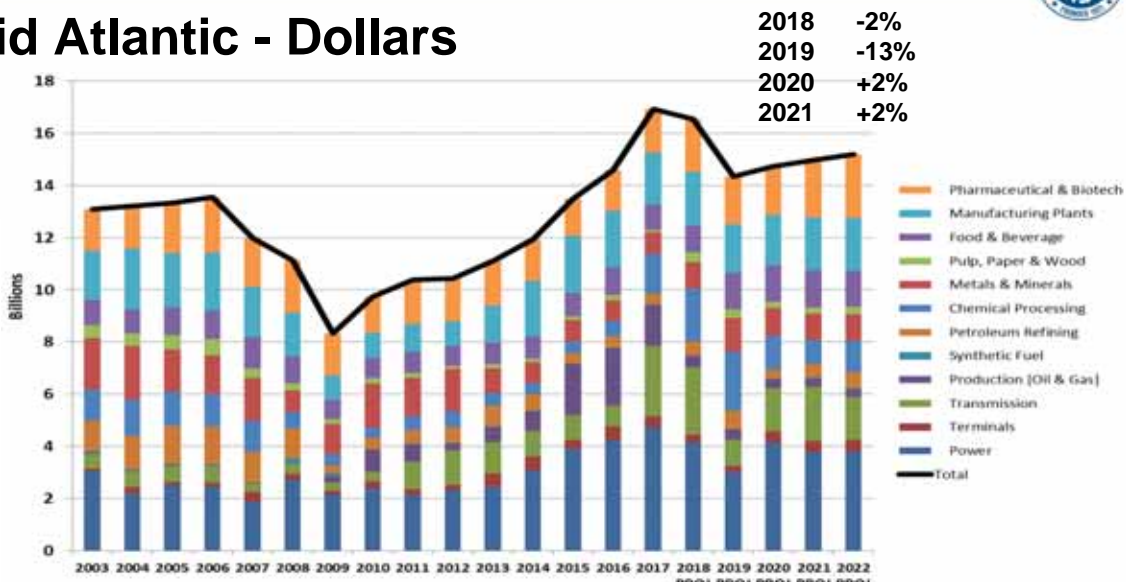
Washington DC



Construction Market Forecast - Industrial



Mid Atlantic - Dollars



Is it a myth or a reality?



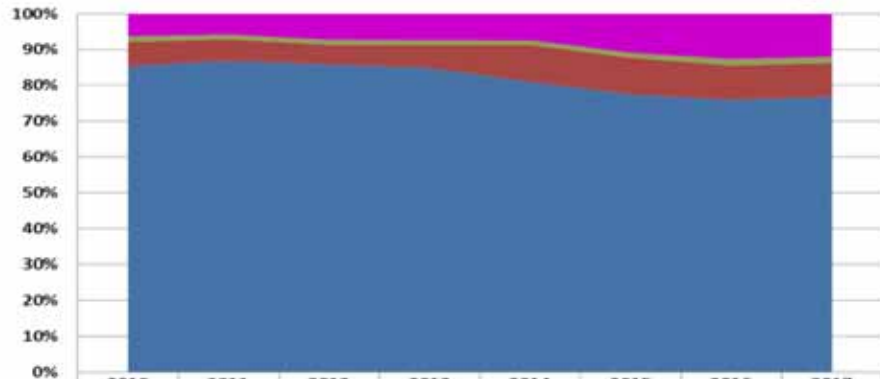
The 232 tariffs solve the import problem



Increase in Imports



Structural Steel: Sources of Material and Fabrication



	2010	2011	2012	2013	2014	2015	2016	2017
Percent of Foreign Mill Material	13%	12%	13%	14%	18%	21%	22%	21%
Percent of Foreign Fabrication	8%	7%	9%	9%	9%	12%	14%	14%
Foreign Material - Foreign Fabrication	400,727	407,109	534,475	568,112	627,692	919,791	1,078,796	1,048,949
Domestic Material - Foreign Fabrication	98,090	95,932	100,337	96,391	107,002	117,570	148,650	153,072
Foreign Material - Domestic Fabrication	433,064	418,008	410,200	498,908	878,518	863,378	828,374	812,490
Domestic Material - Domestic Fabrication	5,431,048	6,123,656	6,314,246	6,533,039	6,862,237	6,541,991	6,459,588	6,712,459

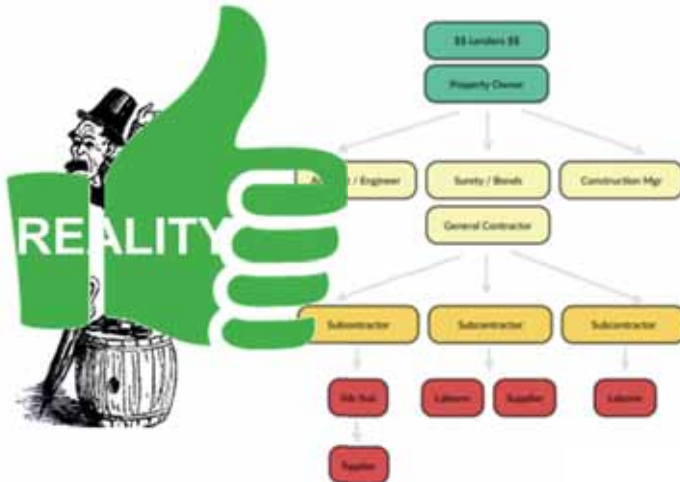


Is it a myth or a reality?



Fabricators need to know decision makers

There is nothing better than someone reminding you that you are at the bottom of the food chain to remind you why you are fighting to get to the top!



The Message



- Yes, the cost of a structural steel framed project will increase, but you have to remember there is a lot of steel in every project.
- In fact in a concrete framed building there is probably about 80% of the tonnage of steel that would be in a steel framed building.
- All steel prices are increasing – not just structural steel – and rebar is going up faster than structural.
- And don't forget that concrete increases 3% to 4% in cost every year.
- The bottom line is, the cost of construction will increase but it will be a similar increase independent of the framing type of the building.

Myths, myths and more myths...



Get involved early...be a MythBuster!



Smarter. Stronger. Steel.