



**IFMA**<sup>TM</sup>

International Facility Management Association

**Empowering Facility Professionals Worldwide**

# Efficient Project Delivery Methods *for Repair, Renovation, Sustainability, Construction*



**IFMA**<sup>TM</sup> **FM Consultants  
Council**  
International Facility Management Association





## **Vision Statement**

*The FMCC is the resource and voice for Facility Management Consultants worldwide to leverage our collective expertise to benefit IFMA members, and the Facility Management profession.*

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## **Mission Statement**

*To serve as a global Facility Management consultants' resource and representative for Knowledge Sharing, Networking and Business Opportunities in support of our impact upon the built environment and value to their clients..*



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*Locate a Speaker*



*Find a Consultant by  
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# Today's Presentation

Moderator:

Joshua Amos, IFMA Components Liaison

Presentation Title:

Efficient Project Delivery Methods  
*for Repair, Renovation, Sustainability, Construction*

Presenter(s): Peter Nicholas Cholakis  
4Clicks Solutions



# Learning Objectives

1. Importance and currently available collaborative project delivery methods
2. Description of key characteristics of a collaborative project delivery method
3. Roles of Owners, AE's, Contractors
4. Importance of standardized information and process-centric technology

# Presenter Bio



- Chief Marketing Officer for 4Clicks Solutions ([www.4clicks.com](http://www.4clicks.com)), leading provider of cost estimating and project management software and solutions to the DOD Sector, and software provider for RSMeans JOCWorks.
- Former Senior Consultant for RS Means / Reed Business Information – Strategic partnering with BIM and cost estimating software OEMs as well as large end users.
- Established VFA as thought leader in the facilities consulting and condition assessment industry.
- Defined the CPMS (Capital Planning and Management Solutions) strategic concept effectively bringing it to a market that VFA dominated for years including the higher education and government segments
- Exceptional domain knowledge and expertise in facilities lifecycle costs and total cost of ownership applicable to various market segments including corporate and healthcare
- Seminal thinker on TCO (total cost of ownership) applicable to construction and facilities industry associations including FFC, APPA, NASFA and IFMA

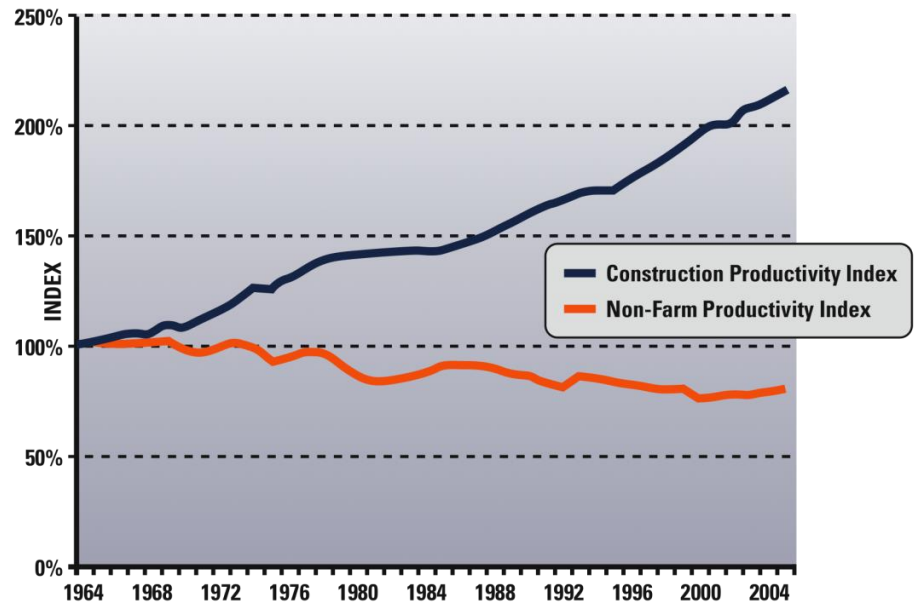




# Economic and Environmental Drivers

- Altered World Economic Landscape
  - AECOO Productivity has DECLINED over the past 40 years
- Non-renewable Resources & Climate Change
  - Built environment is a major contributor

**Constant \$ of Contracts/Workhours of Hourly Workers**  
Sources: U.S. Dept. of Commerce, Bureau of Labor Statistics







# Fundamental Change

- Any major improvement must be driven by Owners (or regulatory mandate) - Owners pay the bills.
- As long as Owners remain satisfied with the status quo and/or remain unaware/uneducated with respect to improvement methods, lean management processes, and supporting technologies, economic and environmental waste will continue to be rampant.



# Key Issues

- Core understanding of fundamental built environment life-cycle management (BLM) principles and practices remains limited.
- U.S. BLM knowledge began within the DoD sector, followed by higher education, healthcare and process-based industry.



# Requirements for Change – A Check List

- A Robust Ontology
- Life-cycle cost focus vs. prevalent first-cost mentality
- Migration from linear strategy-design-construction-demolish to multi-faceted, cyclical portfolio management-project delivery-property management model
- “Trust but measure” – Owners can’t manage what they don’t measure



# Requirements for Change – A Check List (Con't)

- Collaborative construction delivery methods - Integrated Project Delivery, IPD, and Job Order Contracting, JOC
- STOP reinventing the wheel.
  - **Not “rocket science”.**
  - Many, if not most, processes, procedures, and technologies are readily available.
  - Technology is NOT the issue





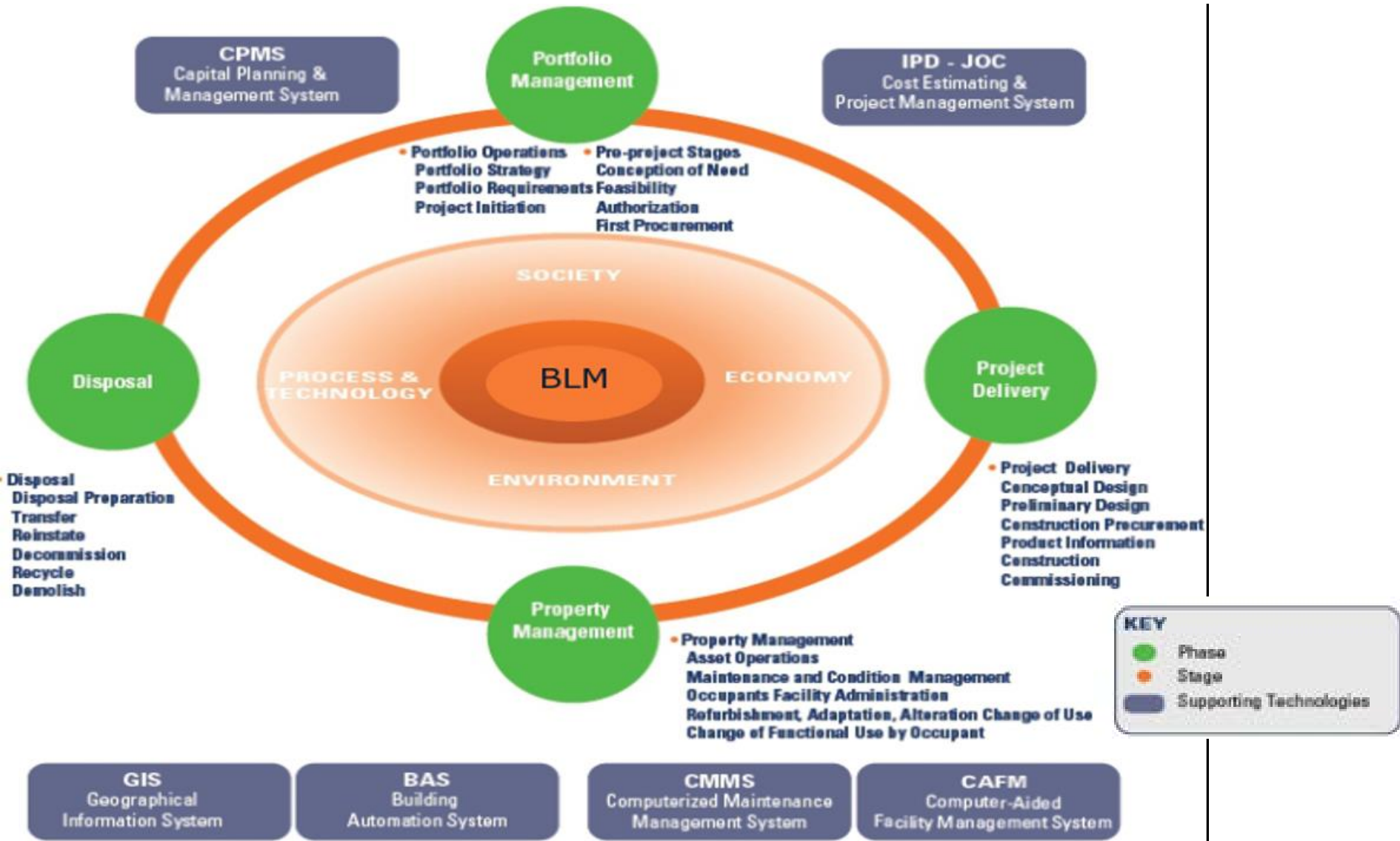
# Factors Affecting Adoption

- Executive leadership & support
- **Human resources**
- Process & Information needs/capabilities
- **Risk** perception
- **Financial** resources



- BIM Ontology
- Cloud Computing
- Integrated Project Delivery
- Education, Support, & Training

- Economics
- Climate Change
- Mandates
- Stakeholder demands





# “Traditional” Project Delivery vs. IPD

- Design-Bid-Build (DBB)
- Design-Build (DB)
- CM-at-Risk (CMAR)

UNPRODUCTIVE

ANTAGONISTIC

LAWSUITS

- Integrated Project Delivery (IPD)
- Job Order Contracting (JOC)

COLLABORATIVE

EFFICIENT

RELATIONSHIPS





## TRADITIONAL PROJECT DELIVERY

## INTEGRATED PROJECT DELIVERY

Fragmented, ad-hoc, hierarchical,  
controlled

### Project participants

Team of project constituencies,  
open, collaborative

Linear, segregated, silo-oriented,  
limited information exchange

### Process

Concurrent, project life-cycle  
oriented, shared information,  
collaborative

Individually managed

### Risk

Collectively shared and managed

Cost-based, individually focused

### Compensation

Performance and value based

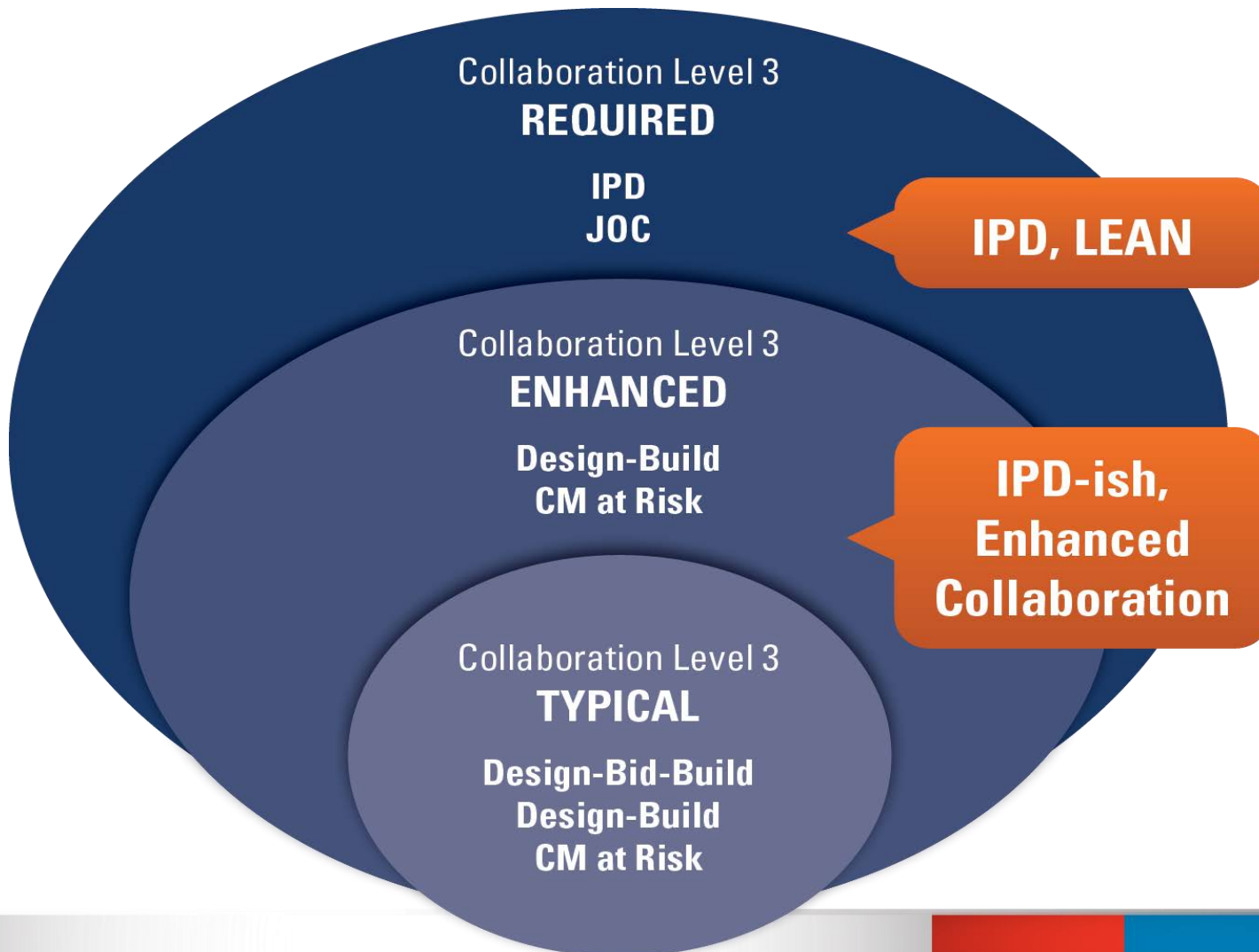
Paper-based and/or digital 2D  
representations, spreadsheets,  
domain-centric software silos,  
email, FTP sites

### Technology

Object oriented, centralized data  
repository linked with  
complementary knowledge-based  
systems, 2D, 3D, and 4D BIM,  
IPD/JOC software, shared model



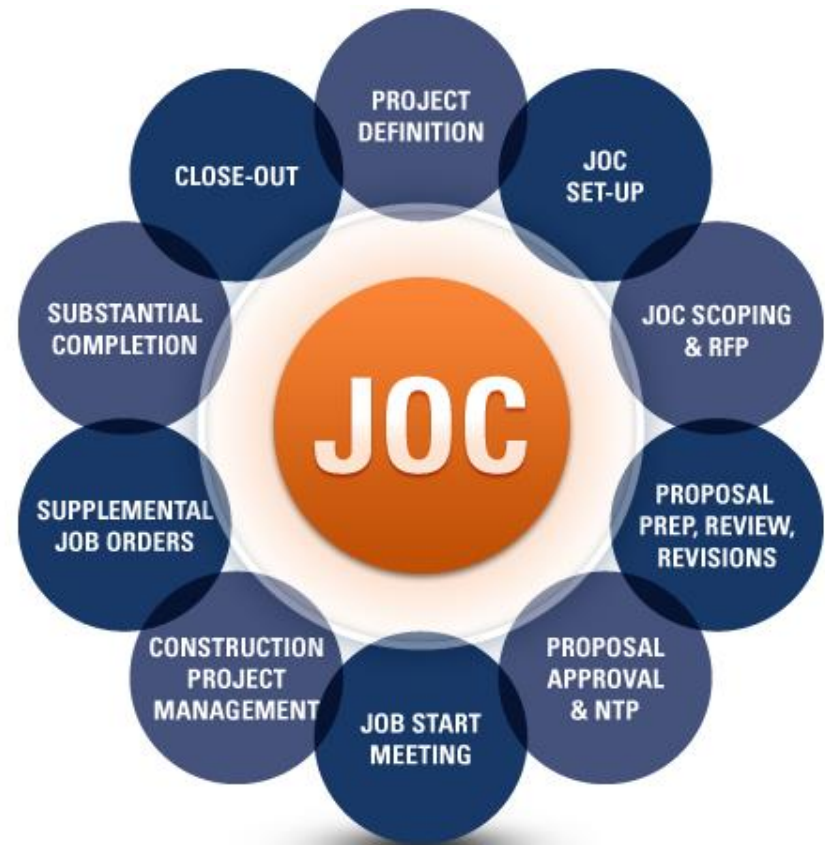
# LEAN Construction





**Job Order Contracting, a proven, process-driven, *Integrated Project Delivery* method *for facility repair, renovation, & minor new construction***

- Collaboration
- Shorter Project Timelines
- Transparency
- Higher Productivity
- Quality
- Longer Term Relationships





- PROVEN – 25-year track within the DOD
- EFFICIENT - Reduces engineering, design, & procurement time
- LONG-TERM - Typically 5 year contracts
- PARTNERING – Requires teamwork – **owners, contractors, AE's**
- PERFORMANCE-based - Contractors selected value/qualifications
- CONVENIENT – Construction services from concept to close-out

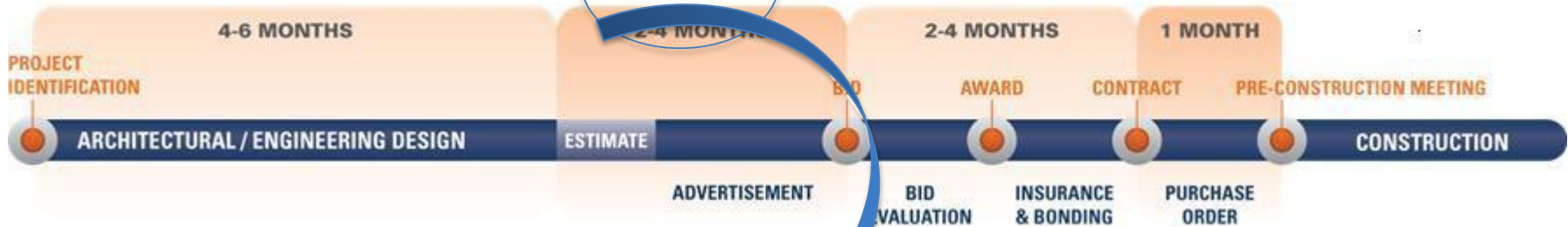


- Win-Win-Win
- More Projects Completed / On-time & On-Budget
- Fewer Change Orders
- Virtually No Legal Disputes
- Contractors/AEs: Reasonable Profit & Predictable Revenue Stream
- Owners: Greater Cost Visibility, Quality Work On-Demand



# Shorter Procurement, Fewer Change Orders = Savings

## Traditional Construction Procurement Process: 9 to 15 Months

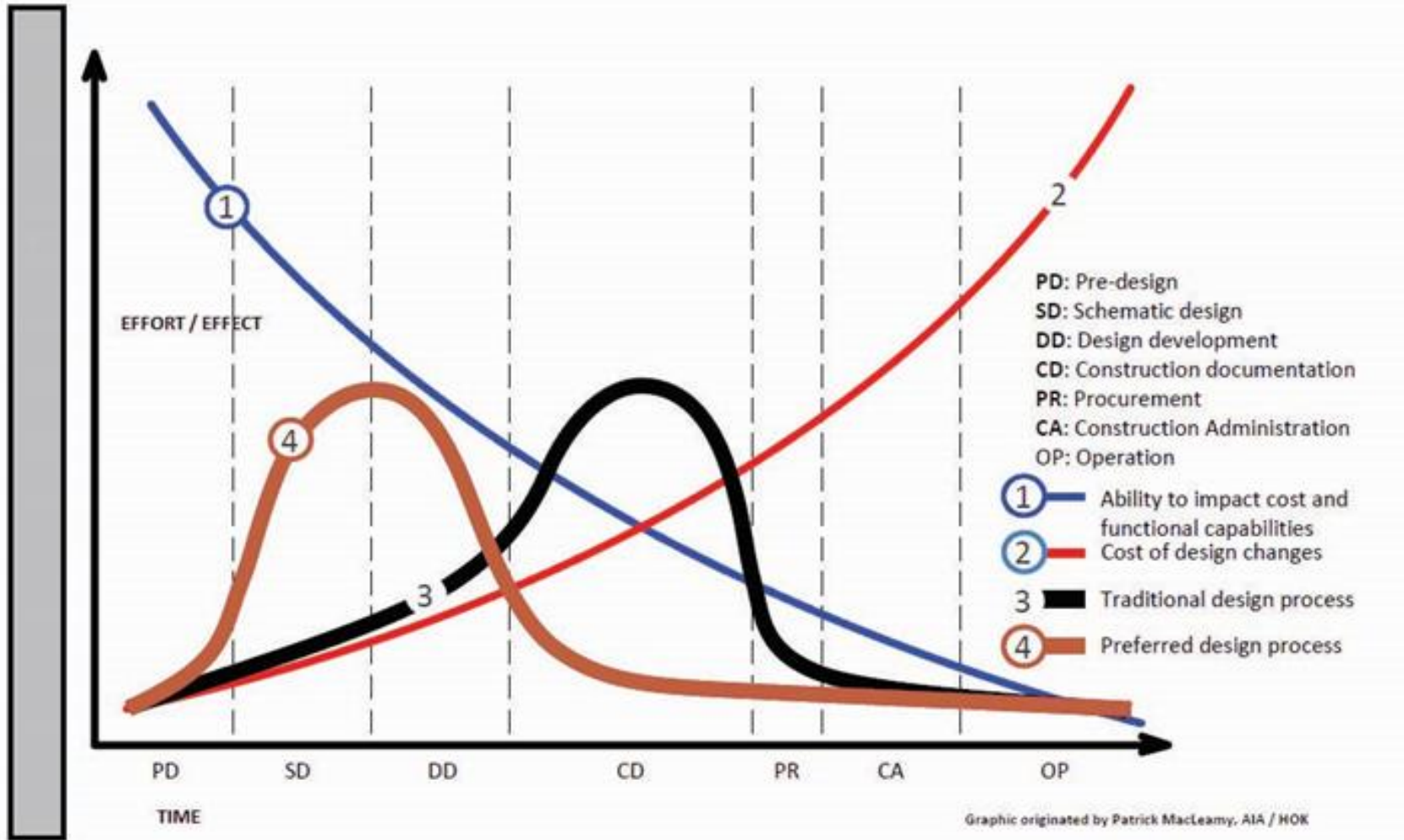


## JOC Construction Procurement Process: 3 to 5 Weeks





# Shorter Procurement, Fewer Change Orders = Savings

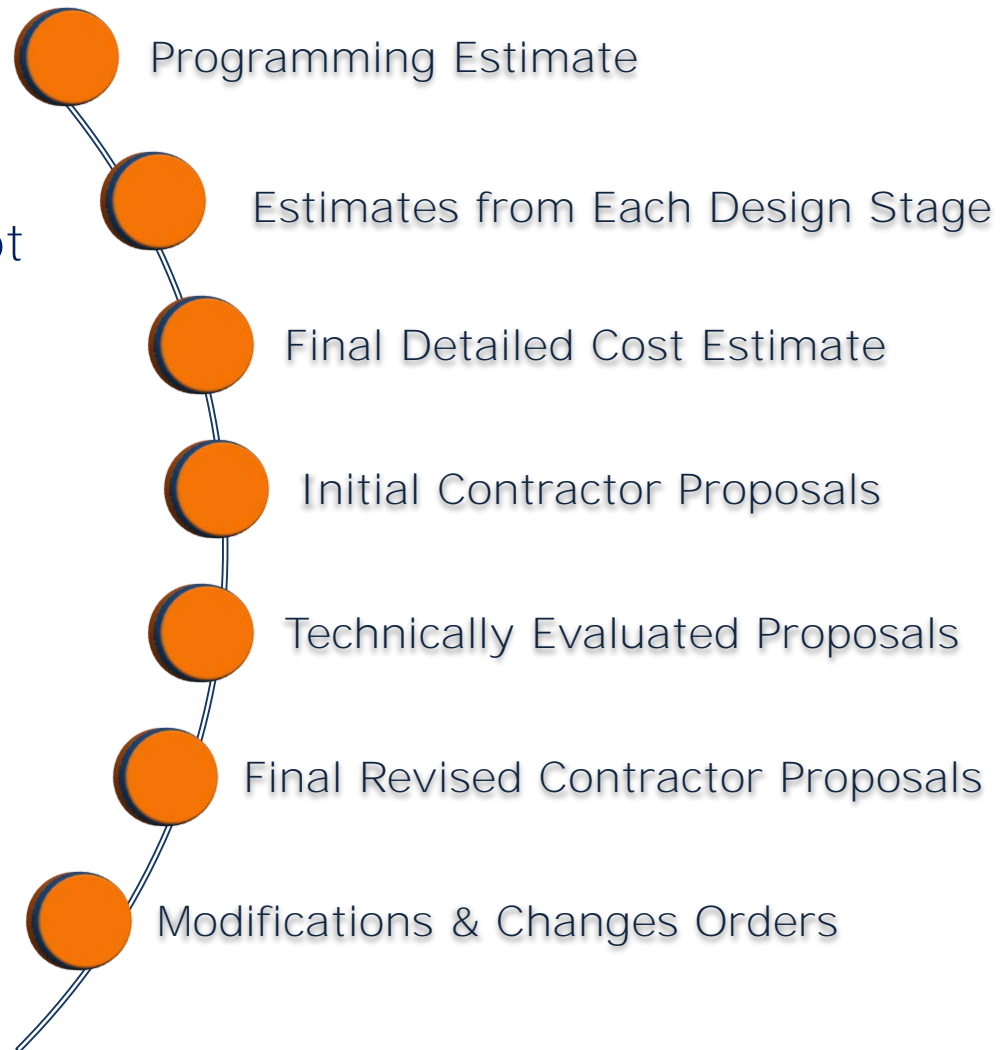




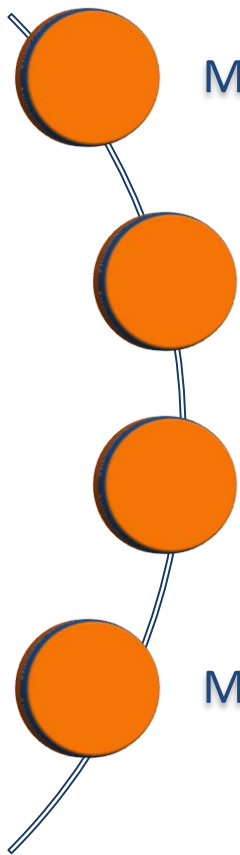
- 
- Integration of Proven Construction Delivery Methods / Project Management
  - Standardized Cost Data Architectures / Taxonomies (i.e. RSMeans<sup>TM</sup> – 400,000 line items)
  - Comprehensive **Document Management**
  - Electronic Visualization / QTO (i.e. eTakeoff<sup>TM</sup>)



- Track & Manage each project from inception to completion.
- Manage a single project, entire contract, or multiple contracts.
- All project milestones, concept thru warranty period.
- Display status of each project
- Maintain a complete cost history
- Record all estimates associated with a project.
- Review value of all projects awarded on a specific contract, or to a specific contractor.
- Report pre-negotiation strategies and post-negotiation summaries.



# Common Data Sets Enable Shared Information

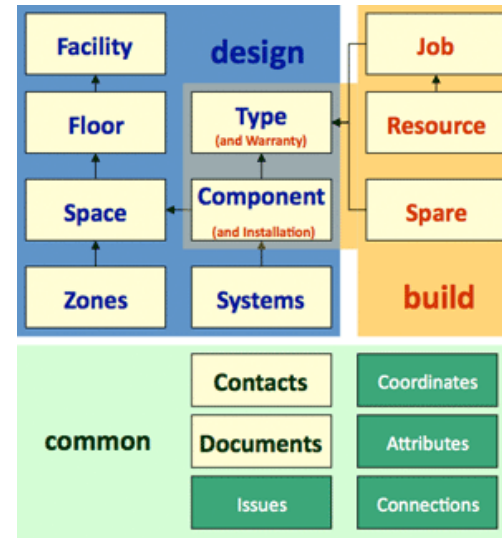


MasterFormat2010, Unifomat II – Reference Cost Databases (aka RSMeans)

COBIE, OMNICLASS

IFC

Metrics: FCI, SCI, Cost/GSF, Cost/NSF, Utilization Rates, ....

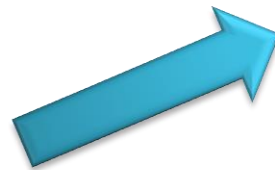




## “WIN-WIN”

Integration of best-in-class, new life-cycle focused processes, technologies and services.

Proprietary, vendor dependent development



Non-proprietary, open standards/development



# Supporting Technology



- Collaborative Software Application
- Cloud Computing
- Contract Management
- Project Management
- Document Management
- Visualization / QTO
- Owner & Contractor Modules
- Integration



Update Contract
X

General | Contacts & Locations | Logo | Contract Scope | Notes

JOC/SABER  
 Multiple Contractors

Contractor: Freeman Builders

Contract Name: 2006 SABER

Contract Short Name: 2006 SABER

Contract Long Name: 2006 SABER

Contract Banner: 2006 SABER

Contract Status: Active

Contract Type: SABER

Contract Number: AE  
BOSS  
BOSJOC  
Design Build  
IDIQ  
JOC  
MAC  
Maintenance Service  
MATOC  
MILCON  
Multi-Trade  
POCA  
**SABER**  
SATOC  
Services  
SOC  
Time and Material  
TOC  
Other

Dates

| Contract Start | Completion |
|----------------|------------|
| 1/01/2006      | 12/31/2010 |

Contract Award Amounts

| Minimum Guarantee | Maximum          |
|-------------------|------------------|
| \$100,000.00      | \$100,000,000.00 |

Performance Period

Number of Contract Years: 5

| Contract Years      | Start     | Completion |
|---------------------|-----------|------------|
| Basic Contract Year | 1/01/2006 | 12/31/2006 |
| First Option        | 1/01/2007 | 12/31/2007 |
| Second Option       | 1/01/2008 | 12/31/2008 |
| Third Option        | 1/01/2009 | 12/31/2009 |
| Fourth Option       | 1/01/2010 | 12/31/2010 |

Record will be Changed

OK Cancel Help

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# Compare, Evaluate, Negotiate, Award

**Updating Estimate [NUEZ091002-Renovate Building - te Contractor - Renovate Building - RFPn]**

General | Work Breakdown Structure | Line Items | Notes

Locate:  Quick-Select Guide: 2009 RSMeans Facilities

| Item   | Description  | Estimated  | Target     | Variance   |
|--|--|------------|------------|------------|
| <input type="checkbox"/> 07-41-13-20-0710      | Steel roofing panels, flat profile, 1-3/4" stan        | 250.0000   | 0.0000     | (250.0000) |
| <input type="checkbox"/> 07-41-13-20-0720      | Steel roofing panels, flat profile, 1-3/4" stan        | 0.0000     | 250.0000   | 250.0000   |
| <input type="checkbox"/> 08-05-05-10-0200      | Selective demolition doors, doors, exterior, 1-3/4" t  | 5.0000     | 5.0000     |            |
| <input type="checkbox"/> 08-05-05-10-0220      | Selective demolition doors, doors, exterior, 1-3/4" t  | 1.0000     | 1.0000     |            |
| <input type="checkbox"/> 08-05-05-10-3400      | Selective demolition doors, special doors, overhe      | 2.0000     | 2.0000     |            |
| <input type="checkbox"/> 08-12-13-25-0100      | Channel metal frames, steel channels with anchors      | 7.0000     | 7.0000     |            |
| <input type="checkbox"/> 08-14-16-09-2180      | Smooth wood doors, flush, interior, 1-3/8" thick, 5 pl | 8.0000     | 8.0000     |            |
| <input type="checkbox"/> 08-51-23-20-1600      | Steel windows, stock, including frame, trim and insu   | 1.0000     | 1.0000     |            |
| <input type="checkbox"/> 08-71-20-30-0040      | Door closers, adjustable backcheck, 3 way mount        | 7.0000     | 7.0000     |            |
| <input type="checkbox"/> 08-71-20-40-1400      | Lockset, heavy duty, cylindrical, with sectional trim, | 7.0000     | 7.0000     |            |
| <input type="checkbox"/> 08-71-20-40-1400-1690 | Lockset, for re-core cylinder, add (Modified using C   | 7.0000     | 7.0000     |            |
| <input type="checkbox"/> 08-71-20-90-1000      | Hinges, full mortise, high frequency, steel base, 4-1  | 12.0000    | 12.0000    |            |
| <input type="checkbox"/> 08-71-20-95-2020      | Kick plates, aluminum, with 3 beveled edges, .050"     | 7.0000     | 7.0000     |            |
| <input type="checkbox"/> 08-81-65-10-1000      | Glass reinforced with wire, polished wire, 1/4" thick, | 24.0000    | 24.0000    |            |
| <input type="checkbox"/> 09-05-05-20-0400      | Selective demolition, flooring, carpet, bond           | 4,000.0000 | 3,500.0000 | (500.0000) |
| <input type="checkbox"/> 09-05-05-30-2350      | Selective demolition, walls and partitions, metal or   | 500.0000   | 500.0000   |            |

Clipboard: Empty

Crew: G-03  
Output: 1,000.00  
Labor Hrs: 0.032  
Unit: S.F.  
Material: \$3.89  
Labor: \$1.26  
Equipment:  
Quantity: 250.000  
Unit Cost: \$5.15

Ext Matl:  
Ext Labor:  
Ext Lbhrs:  
Ext Equip:

Total:

By Item | By Entry | By Quantity | By Total | All | RSMeans | Alternates | Custom | Trades |  TE |  ### |  \$\$\$ |  Reverse Order

Desc: 07-41-13-20-0710 Steel roofing panels, flat profile, 1-3/4" standing seams, 10" wide, standard finish, 26 gauge  
Notes: TE - Line item needs to be changed to another line item - LG 1/12/2009 11:06AM  
Takeoff: (There is no Takeoff formula for this line item.)  
MF95: 07410-700-0710

RSMeans Cost Data:  
2009 RSMeans Facilities  
No City Cost Index in use for this item.

Priced  
 Non-Priced  
 Bare-Cost  
 O&P Pricing

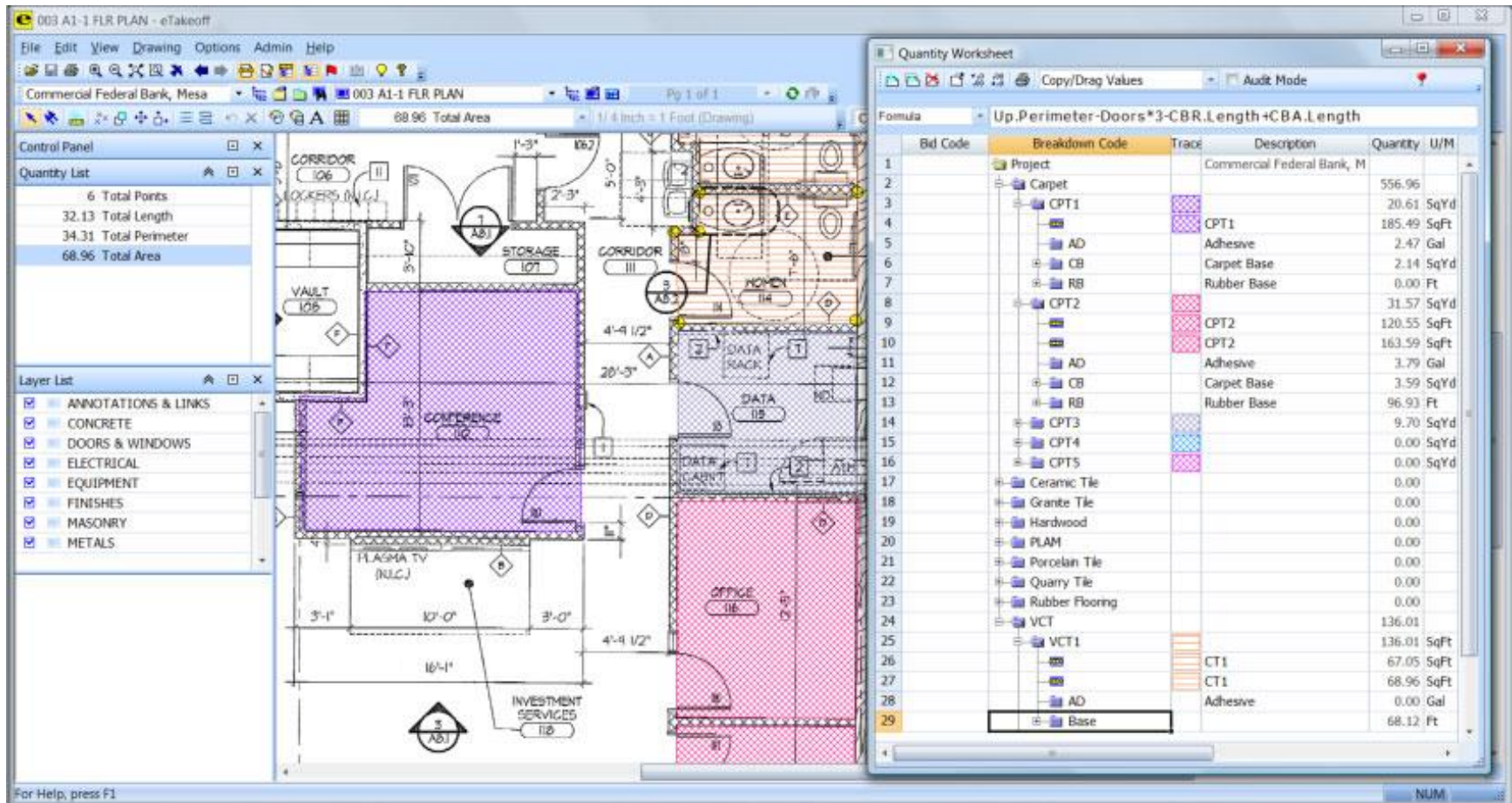
Locator Format:  No Formatting |  As MF95 |  As MF04

Estimate Total: \$73,485.03

Line Items | Reports | Tags: 0

Record will be Changed |  |  |

# Visual Estimating / QTO / Pattern Search



The screenshot displays a software interface for visual estimating and quantity takeoff (QTO). The main window shows a floor plan for '003 A1-1 FLR PLAN' with various rooms and areas highlighted in different colors (purple, pink, blue). A 'Quantity List' panel on the left provides summary statistics:

- 6 Total Points
- 32.13 Total Length
- 34.31 Total Perimeter
- 68.96 Total Area

The 'Quantity Worksheet' window on the right shows a detailed breakdown of quantities for different materials and finishes. The formula bar indicates the calculation:  $Up\_Perimeter - Doors * 3 - CBR.Length + CBA.Length$ . The table below represents the data shown in the worksheet:

| Bid Code | Breakdown Code  | Trace | Description                | Quantity | U/M  |
|----------|-----------------|-------|----------------------------|----------|------|
| 1        | Project         |       | Commercial Federal Bank, M |          |      |
| 2        | Carpet          |       |                            | 556.96   |      |
| 3        | CPT1            |       |                            | 20.61    | SqYd |
| 4        | AD              |       | CPT1                       | 185.49   | SqFt |
| 5        | CB              |       | Adhesive                   | 2.47     | Gal  |
| 6        | RB              |       | Carpet Base                | 2.14     | SqYd |
| 7        | RB              |       | Rubber Base                | 0.00     | Ft   |
| 8        | CPT2            |       |                            | 31.57    | SqYd |
| 9        | AD              |       | CPT2                       | 120.55   | SqFt |
| 10       | CB              |       | Adhesive                   | 3.79     | Gal  |
| 11       | RB              |       | Carpet Base                | 3.59     | SqYd |
| 12       | RB              |       | Rubber Base                | 96.93    | Ft   |
| 13       | CPT3            |       |                            | 9.70     | SqYd |
| 14       | CPT4            |       |                            | 0.00     | SqYd |
| 15       | CPT5            |       |                            | 0.00     | SqYd |
| 16       | Ceramic Tile    |       |                            | 0.00     |      |
| 17       | Grante Tile     |       |                            | 0.00     |      |
| 18       | Hardwood        |       |                            | 0.00     |      |
| 19       | PLAM            |       |                            | 0.00     |      |
| 20       | Porcelain Tile  |       |                            | 0.00     |      |
| 21       | Quarry Tile     |       |                            | 0.00     |      |
| 22       | Rubber Flooring |       |                            | 0.00     |      |
| 23       | VCT             |       |                            | 136.01   |      |
| 24       | VCT1            |       |                            | 136.01   | SqFt |
| 25       | CT1             |       |                            | 67.05    | SqFt |
| 26       | CT1             |       |                            | 68.96    | SqFt |
| 27       | AD              |       | Adhesive                   | 0.00     | Gal  |
| 28       | Base            |       |                            | 68.12    | Ft   |



# Q&A

[pcholakis@4Clicks.com](mailto:pcholakis@4Clicks.com)

[www.4Clicks.com](http://www.4Clicks.com)



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- FM Consultants Council
- Food Service & Restaurant Council
- Information Technology: Council
- Legal Industry Council
- Manufacturing, Industrial & Logistics Council
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- Public Sector Facilities Council
- Religious Facilities Council
- Research & Development Facilities Council
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