

Carter-Burgess

CSI's New Specifications Classification System

Understanding the New MasterFormat™

February 25, 2005
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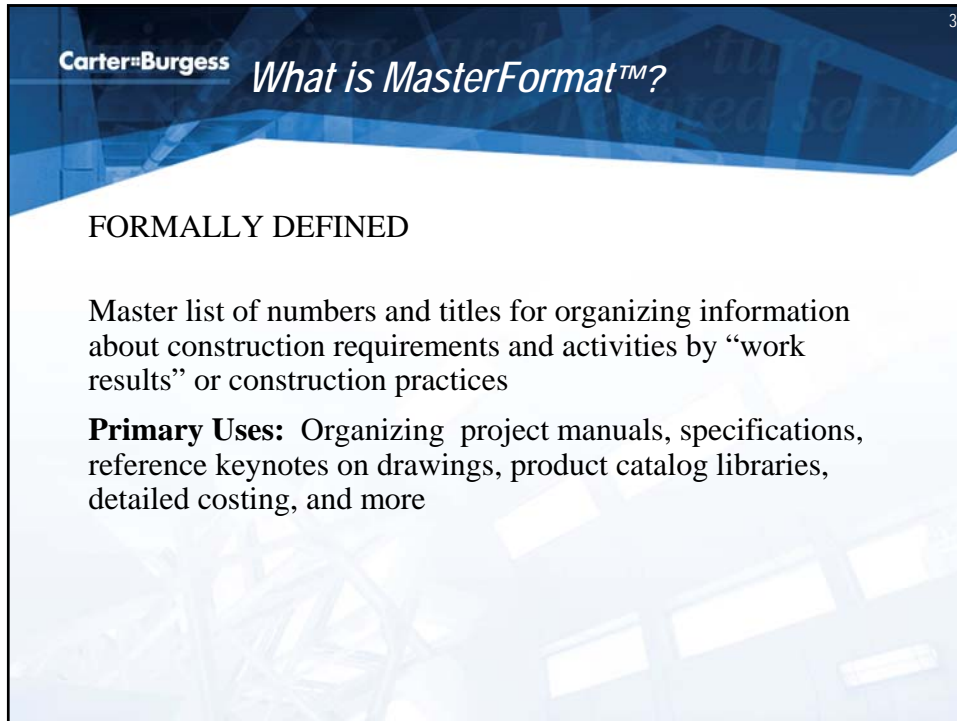
 **Construction Specifications Canada**

 **Devis de Construction Canada**

 **CSI** Knowledge for Creating and Sustaining the Built Environment

Carter-Burgess *Intent*

- Review of the new classification system and changes
- How MasterFormat 2004 links and enhances ability to populate Facility Management systems
- Relationship to San Diego County



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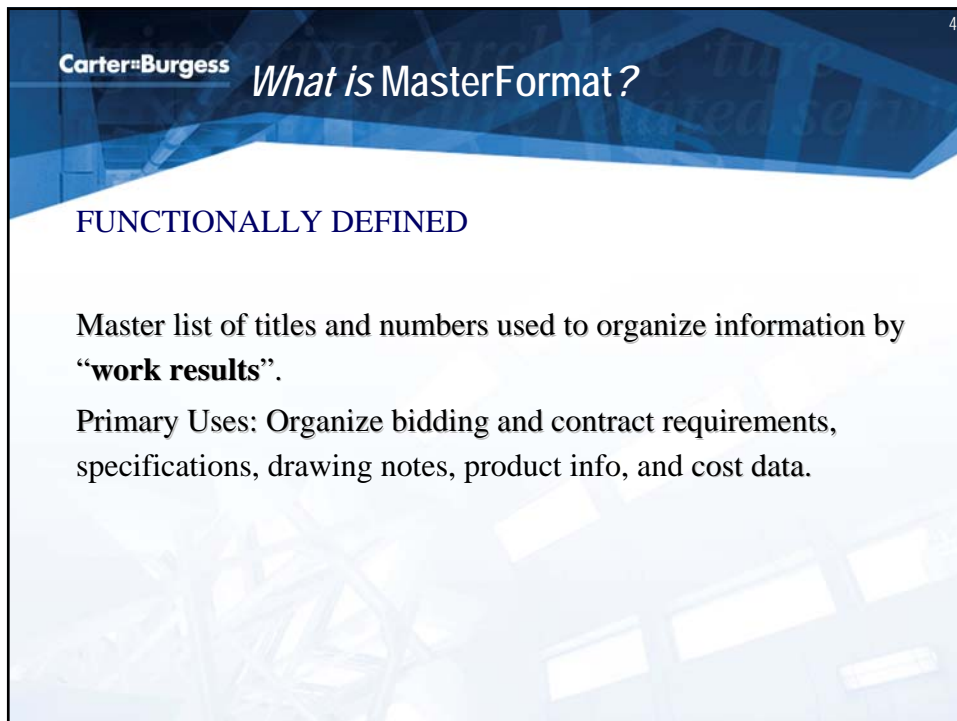
What is MasterFormat™?

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FORMALLY DEFINED

Master list of numbers and titles for organizing information about construction requirements and activities by “work results” or construction practices

Primary Uses: Organizing project manuals, specifications, reference keynotes on drawings, product catalog libraries, detailed costing, and more



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What is MasterFormat™?

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FUNCTIONALLY DEFINED

Master list of titles and numbers used to organize information by “**work results**”.

Primary Uses: Organize bidding and contract requirements, specifications, drawing notes, product info, and cost data.

Carter-Burgess *Industry Acceptance* 5

MasterFormat is the only system for titling and numbering construction specifications in widespread use in North America

- ▶ Royal Architectural Institute of Canada
- ▶ Association of Consulting Engineers of Canada
- ▶ Canadian Construction Association
- ▶ Basis for Canadian Federal Government's Canadian National Master Construction Specification (NMS)

Carter-Burgess *MasterFormat™ History* 6

1964 - "The CSI Format for Construction Specifications" (16 divisions with titles)

1966 - "Uniform System for Construction Specifications, Data Filing and Cost Accounting - Title One Buildings"; endorsed by: AIA, ASLA, AGC, ASC, PC, NSPE, CSI (4-digit numbers)

1972 - "Uniform Construction Index" merger of US and Canadian documents (5-digit numbers)

1978 - "MasterFormat™" joint CSI/CSC publication

1995 - still MasterFormat™ - relationship to UniFormat™ explained; major revisions to Divisions 1, 2, 4, 13, 15, and 16

2004 - still MasterFormat™ - 50 Divisions (16 are reserved for future)

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MasterFormat™ Misconceptions

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- Organizational structure to establish trade jurisdictions
- Organizational structure to establish design jurisdictions
- Product classification structure

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MasterFormat™ Changes for 2004

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To better serve its original purpose, was determined that MasterFormat 1995:

- ▶ Was not meeting needs of industry
- ▶ Was overcrowded in many of the divisions
- ▶ Would not continue to adequately address needs of building engineering and facility services
- ▶ Did not adequately address facility management and operations activities for the life cycle of construction
- ▶ Did not adequately address needs of construction other than buildings (such as civil, environmental, process, electronic communications, controls)
- ▶ Had inconsistencies in structure and organization
- ▶ There was a proliferation of Division 17s!

Carter-Burgess *Title Terminology* 9

- Titles revised to use terminology that more consistently reflects work results – not products.
- Examples:
 - ▶ 03200 – Concrete Reinforcement now 03 20 00 Concrete Reinforcing
 - ▶ 05210 – Steel Joists now 05 21 00 Steel Joist Framing
 - ▶ 06160 – Sheathing remains 06 16 00 Sheathing

Carter-Burgess *Terminology Changes* 10

MF 95	MasterFormat 2004
Bid Solicitation	<i>Solicitation</i>
Instruction to Bidders	Instructions for Procurement
Information Available to Bidders	<i>Available Information</i>
List of Drawings	List of Drawing <i>Sheets</i>
Definitions	Definitions
00570 Definitions	<i>Procurement Definitions</i>
007XX Definitions in General	<i>Contracting Definitions</i>
Conditions	Definitions
0142X Definitions	

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Carter-Burgess *Products versus Work Results*

MF 95	MF 04
Carpet	Carpeting (carpet, floor filler)
Tile	Tiling (tile, mortar, membrane)
Paint	Painting (thinners, fillers)
Grouts	Grouting (aggregate, cement, water)
Metal Deck	Metal Decking (steel, primers, insulation)
Interior Luminaires	Interior Lighting (fixture, lamp, ballast)
Floor Treatment	Flooring Treatment (tile, filler, adhesive)

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Carter-Burgess *Reassignment of Subject Matter*

From Division 2 – Site Construction to:

- ▣ Earthwork: Division 31
- ▣ Exterior Improvements: Division 32
- ▣ Utilities: Division 33
- ▣ Transportation: Division 34
- ▣ Waterway and Marine Construction: Division 35

Carter-Burgess *Existing Conditions* 13

Division 02 Existing Conditions

02 20 00	Assessment
02 30 00	Subsurface Investigation (02210)
02 40 00	Demolition and Structure Moving (02220)
02 50 00	Site Remediation (02130)
02 60 00	Contaminated Site Material Removal (02130)
02 70 00	Water Remediation
02 80 00	Facility Remediation
02 90 00	Unassigned

Carter-Burgess *Reassignment of Subject Matter* 14

From Division 11 – Equipment to:

- Process Equipment: That Named Subgroup, Divisions 40-49

From Division 13 – Special Construction to:

- Fire Suppression: Division 21
- Integrated Automation: Division 25
- Electronic Safety and Security: Division 28

Carter-Burgess *Reassignment of Subject Matter* 15

From Division 15 – Mechanical to:

- ◆ Plumbing: Division 22
- ◆ Heating Ventilating and Air Conditioning (HVAC): Division 23

From Division 16 – Electrical to:

- ◆ Electrical: Division 26
- ◆ Communications: Division 27

Carter-Burgess *MasterFormat™ Groups* 16

2004 MasterFormat Divided into Two Groups:

- ▶ Procurement and Contracting Requirements Group (Division 00)
- ▶ Specifications Group (Division 01 – 49)

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Carter-Burgess *Procurement and Contracting Requirements – Division 00*

Introductory Information

Procurement Requirements and Contracting Requirements

- ▶ Defines procedures for preparing and submitting bids or proposals
- ▶ Defines processes, rights, responsibilities, and relationship of parties to the contract
- ▶ Referred to in the 1995 edition as the “zero series”

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Carter-Burgess *Specifications (Divisions 01 – 49)*

Defines requirements for products, materials, workmanship, maintenance, and operation upon which work is based, as well as administration and performance of the the work.

Divided into Five Subgroups:

- ▶ General Requirements – Division 01
- ▶ Facility Construction – Divisions 02 - 19
- ▶ Facility Services – Divisions 20 - 29
- ▶ Site and Infrastructure – Divisions 30 - 39
- ▶ Process Equipment – Divisions 40 – 49

We used to know these as the 16 Divisions!!

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Carter-Burgess *MasterFormat™ Organization*

MF 95 Groupings Introductory Information Bidding Requirements Contracting Requirements Facilities and Spaces Systems and Assemblies Construction Products and Activities	MF 04 Groups Procurement and Contracting Requirements Includes Introductory Information Includes Procurement Requirements Includes Contracting Requirements Specifications
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Carter-Burgess *MasterFormat™ Organization*

MF 95 1 General Requirements 2 <i>Site Construction</i> 3 Concrete 4 Masonry 5 Metals 6 Wood and Plastics	MF 04 General Requirements 01 General Requirements Facility Construction 02 Existing Conditions 03 Concrete 04 Masonry 05 Metals 06 Wood, Plastics & Composites
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Carter-Burgess *MasterFormat™ Organization*

MF 95 7 Thermal & Moisture Protection 8 Doors and Windows 9 Finishes 10 Specialties 11 Equipment 12 Furnishings 13 Special Construction 14 Conveying Systems	MF 04 07 Thermal & Moisture Protection 08 Openings 09 Finishes 10 Specialties 11 Equipment 12 Furnishings 13 Special Construction 14 Conveying Equipment 15-19 Reserved for Future Expansion
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Carter-Burgess *MasterFormat™ Organization*

MF 95 <ul style="list-style-type: none">▶ 13 – Special Construction▶ 15 - Mechanical ▶ 16 - Electrical	MF 04 Facility Services <ul style="list-style-type: none">▶ 20 - Reserved for Future▶ 21 - Fire Suppression▶ 22 - Plumbing▶ 23 - Heating, Ventilating, and Air Conditioning (HVAC)▶ 24 - Reserved▶ 25 - Integrated Automation▶ 26 - Electrical▶ 27 - Communications▶ 28 - Electronic Safety and Security▶ 29 - Reserved
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Carter-Burgess *MasterFormat™ Organization*

MF 95	MF 04
	Site and Infrastructure
	30 - Reserved
	31 - Earthwork
	32 - Exterior Improvements
	33 - Utilities
	34 - Transportation
	35 - Waterway & Marine
	Construction
	36-39 - Reserved
<i>2 – Site Construction</i>	

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Carter-Burgess *MasterFormat™ Organization*

MF 95	MF 04
	Process Equipment
	40 – Process Integration
	41 - Material Processing and Handling Equipment
	42 - Process Heating, Cooling and Drying Equipment
	43 - Process Gas & Liquid Handling, Purification & Storage Equipment
<i>11 – Equipment</i>	

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Carter-Burgess *MasterFormat™ Organization*

MF 95	MF 04
<i>11 – Equipment</i>	44 - Pollution Control Equipment
	45 - Industry-Specific Manufacturing Equipment
	46 - Reserved
	47 - Reserved
<i>13 – Special Construction</i>	48 - Electrical Power Generation
	49 - Reserved

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Carter-Burgess *Expansion of Section Numbers*

Revised to:

- ▶ more adequately address subjects
- ▶ provide room for future addition of new subjects without restructuring
- ▶ allow room for more subjects at each level of classification
- ▶ to accommodate more consistent classification principles
- ▶ minimize overcrowding due to limitations of a classification system having more subjects than can be managed with five digits
- ▶ add sixth digit in middle of the scheme allowing three sets of paired numbers
- ▶ still allows for three levels of subordination

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Carter-Burgess *MasterFormat™ Numbering*

MF 95

Finned Water Tube Boilers

Level 1
Level 2
Level 3
Level 4

15 5 1 0

At Level 3: Max. 81 sections

MF 04

Level 1
Level 2
Level 3
Level 4

23 52 33 . 13

At Level 3: Max. 9801 Sections

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Carter-Burgess *MasterFormat™ Numbering*

MF 95

03300 Cast-in-Place Concrete

07920 Joint Sealants

09910 Paints

15410 Plumbing Fixtures

15735 Split-System A-C Units

16270 Transformers

MF 04

03 30 00 Cast-in-Place Concrete

07 92 00 Joint Sealants

09 91 00 Painting

22 40 00 Plumbing Fixtures

23 81 26 Split-System A-Cs

26 10 00 Medium-Voltage
Electrical Distribution (2400 V
to 69 kV)

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Carter-Burgess *Section Number Example*

MasterFormat 1995 Section 04220 - Concrete Masonry Units
MasterFormat 2004 Section 04 22 00 – Concrete Unit Masonry

The second pair of numbers, in this case "22", represents the Level 2
 The third pair, "00", represents Level 3 number.

Since a pair of digits represents each Level of classification, there is room to address ten times as many subjects at Levels 2 and 3, providing more flexibility and room for future expansion than the five-digit system was capable of supplying.

04 22 00	Concrete Unit Masonry (Level 2)
04 22 23	Architectural Concrete Unit Masonry (Level 3)
04 22 23.13	Exposed Aggregate Concrete Unit Masonry (Level 4)

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Carter-Burgess *Level 5 Numbering Usage*

22 42 00 . 00 . 01 Commercial Plumbing Fixtures

Methods of Specifying

- Descriptive
- Proprietary
- Reference Standard
- Performance

Level 3
 22 42 13 Commercial Water Closets and Urinals
 22 42 16 Commercial Lavatories and Sinks
 22 42 19 Commercial Bathtubs
 22 42 23 Commercial Shower Receptors and Basins
 22 42 26 Commercial Disposers
 22 42 29 Shampoo Bowls

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Carter-Burgess *Level 5 Numbering Usage*

09 91 13 . 00 . 10 **Exterior Painting**

Level 5 (user defined)

Grade of Products

- Custom
- Premium
- Economy

Level 3
09 91 13 Exterior Painting
09 91 23 Interior Painting

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Carter-Burgess *Maintain Organization Consistency*

Used at Level 2 - XX 01 XX

- 01 - Operation and Maintenance
- 05 - Common Work Results
- 06 - Schedules
- 07 - Insulation
- 08 - Commissioning
- 09 - Instrumentation and Control

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Carter=Burgess *Maintain Organization Consistency*

23 20 00 HVAC Piping and Pumps (15180)

23 21 00 Hydronic Piping and Pumps (15183)

- 23 21 01 Operation and Maintenance for Hydronic Piping and Pumps
- 23 21 08 Commissioning of Hydronic Piping and Pumps
- 23 21 13 Hydronic Piping
 - 23 21 13.13 Underground Hydronic Piping
 - 23 21 13.23 Aboveground Hydronic Piping
 - 23 21 13.33 Ground-Loop Heat-Pump Piping
- 23 21 23 Hydronic Pumps
 - 23 21 23.13 In-Line Centrifugal Hydronic Pumps
 - 23 21 23.16 Base-Mounted Centrifugal Hydronic Pumps

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Carter=Burgess *Performance Requirements*

Section 01 80 00 - Performance Requirements

Includes requirements for functional elements (systems and assemblies) that perform basic fundamental functions; is organized by functional elements by UniFormat; may include performance or other type requirements for systems and assemblies that include elements in multiple titles, in multiple divisions, or both.

- 01 81 00 Facility Performance Requirements
- 01 82 00 Facility Substructure Performance Requirements
- 01 83 00 Facility Shell Performance Requirements
- 01 84 00 Interiors Performance Requirements
- 01 85 00 Conveying Equipment Performance Requirements
- 01 86 00 Facility Services Performance Requirements
- 01 87 00 Equipment and Furnishings Performance Requirements
- 01 88 00 Other Facility Construction Performance Requirements
- 01 89 00 Site Construction Performance Requirements

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Life Cycle Activities

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Section 01 90 00 – Life Cycle Activities

Includes administrative and procedural requirements for commissioning facilities and facility systems and assemblies that have elements in multiple divisions; requirements for operating a facility, after commissioning; requirements for maintaining a facility, after commissioning; and requirements for deactivating a facility or portion of it from operation.

- 01 91 00 Commissioning
- 01 92 00 Facility Operation
- 01 93 00 Facility Maintenance
- 01 94 00 Facility Decommissioning

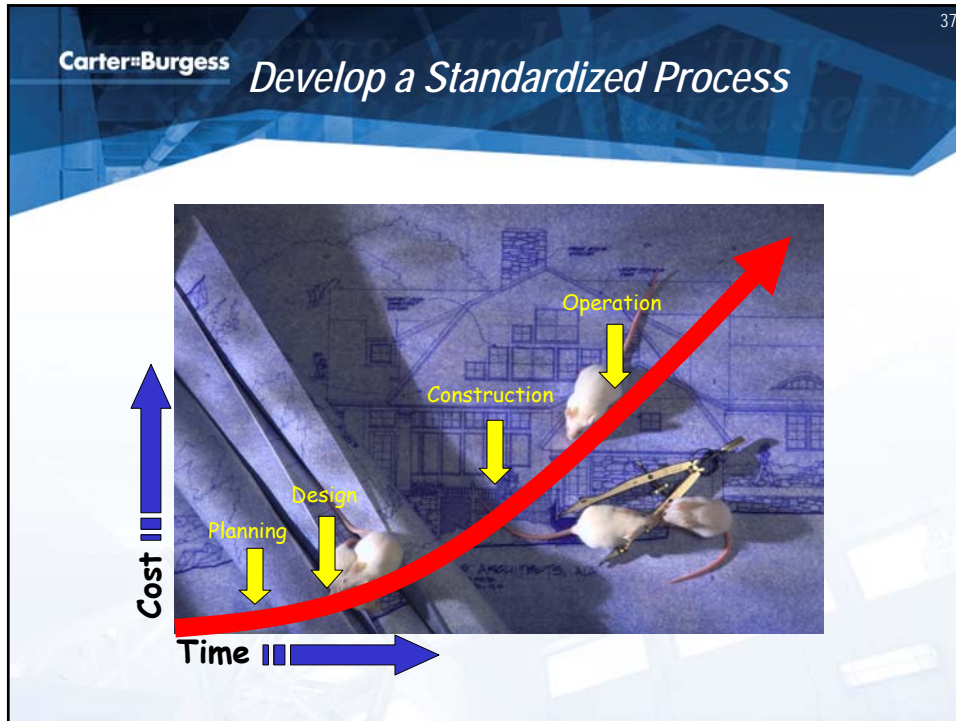
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Strategic Asset Management

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A **planned** and **pro-active** approach to asset management developed and initiated prior to design and construction and then utilized throughout the life-cycle of the asset.

Life-Cycle of the Asset – what is that?



- Carter=Burgess *Plan for Facility Management* 38
- **75 percent** of the cost of ownership occurs **AFTER** design and construction
 - **75 percent** of the decisions that drive cost of ownership occur **BEFORE** design
 - How the County “*Defines Success*” will dictate the priorities

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- OCCS, aka OmniClass
 - ▶ is designed to provide standardized basis for classifying information
 - ▶ utilized by the North American AEC industry, throughout the full facility life cycle – from conception to demolition
- UniFormat
 - ▶ is designed to provide a standardized basis for classifying physical elements of a facility, by primary function
 - ▶ functional elements include systems and assemblies
 - ▶ provides means to organize design criteria, performance requirements, cost data, descriptive requirements for systems and assemblies in such things as PPD, estimates, reference details

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- provides choices for data filing by system and assembly classification
- numbers can be used in addition to other cataloging or classification systems
- numbers can be used to identify “inventory” of the construction products
- inter-relates with OmniClass and UniFormat

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Carter-Burgess *True Life-Cycle of the Built Environment*

- integrate metrics into Programming and Design Criteria
- develop and Maintain **Total Cost of Ownership** balance sheet
- train the Design Team to understand Asset Management
- create Standardized Contract Documents
 - ▶ Standard Submittal Requirements
 - ▶ Standard Substitutions Management
 - ▶ Standard Requirements for Obtaining and CLASSIFYING Electronic Information

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Carter-Burgess *Monitor Projects Continuously*

- maintain your **Total Cost of Ownership** balance sheet
- reconsider or understand “Value Engineering” Is It?
- control Change and Substitution
- Electronic Submittal Requirements
 - ▶ Total Cost of Ownership Balance Sheet
 - ▶ UniFormat – MasterFormat Breakdown of Asset Information
 - ▶ Operations and Maintenance Plan
 - ▶ Warranty Information
 - ▶ Component Renewal Requirements

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Carter-Burgess *Working Hard vs Working Smart*

- **Metrics** define appropriate levels of operation and maintenance expenditure
- Electronic Submittals jump-start the CMMS
 - ▶ Asset Inventory
 - ▶ Preventive Maintenance Requirements
 - ▶ Component Renewal Expectations
 - ▶ Annual Funding Needs
- Validated O&M plan provides the maintenance strategy

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Carter-Burgess *Strategic Asset Management "Influence Points"*

- Understanding of Operations & Maintenance Cost
- Integration of Security Issues
- Technology Flexibility
- Sustainable Design
- Maintainability

The diagram illustrates the Strategic Asset Management process flow across four main stages: Programming, Design, Construction, and Facilities Management. Each stage is further divided into sub-phases: Programming (Strategic Planning, Functional Programming), Design (Schematic Design, Design Development, Constructive Documents), Construction (Tender/Proposal, Construction Phase), and Facilities Management (Commissioning Phase, Asset Management, Post Proj. Evaluation). A red arrow representing 'Graphic Data' and a blue arrow representing 'Non-Graphic Data' flow through the process. Three yellow circles labeled 'WEAK LINK' are positioned at the transitions between Programming and Design, Design and Construction, and Construction and Facilities Management. Below the diagram, three red boxes are labeled 'Define', 'Request', and 'Capture', corresponding to the weak link areas.

Carter-Burgess *Strategic Asset Management* 45

- begins at asset conception
- makes Critical Facility Management Decisions **BEFORE** design and construction
- creates “*Success Metrics*” for the life-cycle of the asset
- monitors Total Cost of Ownership
- develops a life cycle approach to Facility Management

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Transitioning to MasterFormat™2004

■ <i>BSD SpecLink</i>	<i>November 2004</i>
■ <i>Canadian National Master Spec</i>	<i>January 2005</i>
■ <i>ARCOM MasterSpec</i>	<i>May 2005</i>
■ <i>CSRF SpecText</i>	<i>July 2005</i>
■ <i>UFGS (DoD)</i>	<i>April 2006</i>
■ <i>4Specs</i>	<i>November 2004</i>
■ <i>McGraw-Hill Sweets</i>	<i>January 2006</i>
■ <i>Reed Architect's First Source</i>	<i>January 2006</i>



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Transitioning to MasterFormat™ 2004

CSI plans to make support materials available to users in the form of PowerPoint presentations and other educational materials.

The MasterFormat 2004 Edition represents the most comprehensive revision this classifications system has undergone its history. The new edition will allow users to organize the extensive and detailed specifications that are demanded by today's facilities.