

# FACILITIES / ENERGY MANAGEMENT

## *An External Standard and Best Practice Approach to the Condition Assessment Process*

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- A Service Disabled Veteran Owned Small Business

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# Intro – History....

**DOE has a set of condition assessment practices (10-11 Volume set of Condition Assessment Survey (CAS) Manuals) that were written specifically for DOE in the early 90's**

# Intro....

What portions of the CAS Manuals are?

- good and usable
- what areas are covered well

Are they still adding value?



# Intro - Observation....

These CAS manuals are  
**Ready for Modernization**

# Intro...

- OECM refers to them as a reference for the field
- Updating and/or rewriting these manuals would be costly
- Special, specific, and unique DOE inspection procedures for facilities is counter to DOE corporation guidance

# Intro - Objective....

INVESTIGATE A BETTER METHODOLOGY FOR PROVIDING THE SURVEY DATA PREVIOUSLY PROVIDED IN THE CAS MANUALS

**A GOAL IS TO USE INDUSTRY STANDARDS** where possible

**ADDITIONAL GOAL IS TO USE BEST PRACTICES**

# Options we considered...

1. Status quo + adding an addendum addressing greening and sustainability.
2. Update the manual set and incorporate greening and sustainability.
3. Combine and de-conflict the manuals into a more compact set that is easier to maintain and more user friendly. Remove CAIS input guidance.
4. Phase out the manuals and replace with a short outcome based guide that defines a successful inspection program.

# Options we considered...

## Option 5.

Phase out the manuals and replace with a living document that indentifies specific inspection methodologies available and codes/standards assembled by discipline. Utilize a web-base interactive portal to provide best practices for Condition Assessment methodologies. The portal would modernize the accessibility to updated inspection standards

# Options ...

## Others ?



# What we found ....

- The best result can be obtained by accessing industry inspection standards from several sources.



# Benchmarks....

DOD, Colleges, Local Governments and  
Industry.....what are they doing?



# Look Ahead....

MY RECOMMENDATION IS – Option 5

*“Phase out the manuals and replace with a living document that identifies specific inspection methodologies available and codes/standards assembled by discipline. Utilize a web-base interactive portal to provide best practices for Condition Assessment methodologies. The portal would modernize the accessibility to updated inspection methodologies in real-time.”*

# The Way Ahead....

It is recommended that Option 5 be implemented.

- IMPLIMENTATION WILL NOT AFFECT THE ONGOING CONDITION ASSESSMENT AND REPORTING PROCESSES

# Our proposed way forward..

## Using UNIFORMAT II

- Investigate 10 -15 UNIFORMAT II Elements
- Research Virtual Library Concept

## DOE CONDITION ASSESSMENT - WORK BREAKDOWN STRUCTURE UNIFORMAT II

SUBSTRUCTURE	SHELL				INTERIORS		SERVICES		SPEC. CONST.	SITWORK			
FOUNDATIONS A10	SUPER- STRUCTURE B10	EXTERIOR B20	ROOFING B30	INTERIOR C10-PARTITIONS C30-INTERIOR		CONVEYING SYSTEMS D10	MECHANICAL SYSTEMS D30	FIRE PROTECTION D40	SPECIALTY SYSTEMS F10	PREPARATION G10	UTIL DIST MECHANICAL G30	UTIL DIST ELECTRICAL G40	SITE G90
FOOTINGS Spread Strip Grade Beam	BEAMS Cast in Place Precast Concrete Steel	WALLS Concrete Masonry Stucco Gunita Stone Stone Veneer w/ Straw Bales	BUILT-UP MEMBRANE SINGLE-PLY MEMBRANE METAL COATED FOAM MEMBRANE SHINGLES TILES PARAPETS ROOF SPECIALTIES, HATCHES SKYLIGHTS DRAINAGE GUNITA CANOPIES	PARTITIONS CONVENTIONAL Concrete / Masonry Structural Tile Drywall / Plaster PARTITIONS SPECIALTY TOILET PARTITIONS & ACCESSORIES INTERIOR Doors Cabinets Fittings	FLOOR FINISHING Carpet Composition / Resilient Flooring Floor (Concrete) Terrazzo Cork Tile Wood CEILING Drywall/Plaster Acoustical Wood Concrete Metal PAINT FINISHES / COATINGS Conventional Special Finishes WALL COVERING Coverings Paneling Tile	ELEVATORS Hydraulic Traction Elevator Escalators SPECIAL: Pneumatic Tube Systems Hotels and Cranes D20 PLUMBING SYSTEMS PLUMBING Domestic Water Drain, Waste & Vent Compressed Air Vacuum Natural Gas SPECIAL SYSTEMS Drinking Water SYSTEMS	HVAC All Inclusive COOLING Centrifugal Chillers Absorption Chillers Packaged Refrigeration Chillers Packaged Condensing Unit Packaged HVAC Refrigeration Compressors Condenser Cooling Towers Chilled Water Distribution Condenser Water Chemical Water Treatment Terminal Cooling Units HEATING & VENTILATING Fuel Oil Boilers Hot Air Furnaces Hot Water Distribution Steam Distribution & Condensate Return Chemical Treatment Terminal Units Air Handlers & Fans Ductwork RENEWABLE Fuel Cells Solar Energy Wind Energy Energy Efficiency	FIRE PROTECTION Wet Pipe Sprinkler Dry Pipe Sprinkler Standpipe Halon Fire Suppression CO2 Fire Suppression T50 ELECTRICAL SYSTEMS SERVICE & DISTRIBUTION Service Entrance Low Voltage Distribution Medium Voltage Distribution LIGHTING Luminaires SPECIAL SYSTEMS Cable Trays Communication Circuits Control Units Data Proc. Elec. Equip. Generators/ Standby Equip. Standby-Emergency Health Care Fac. Elec. Equip. Heating Baseboard Rad. Lightning Prot. & Surge Supp. Petrol. Dip.Fac. Signal Circuits Uninterruptible Power Supplies	CANOPIES LOADING DOCKS TANKS Elevated Burlap Ground Level DOMES BULK STORAGE, METAL FRAMING LOUVERS & VENTS ACCESS FLOORS INTEGRATED CEILING MEZZANINE STRUCTURES WASTE HANDLING F20 SPECIALTY CONSTR. DEMO DEMOLITION Building Elements Electrical Hazardous Components Abatement	PREPARATION Clearing Demolition Earthwork Haz Waste Remediation G20 SITE IMPROVEMENTS Road and Walks Parking Roads Landscaping Walks LANDSCAPING FLAGPOLES SIGNAGE	COOLING Rotary Screw Chillers Chilled Water Distribution System UTILITY DISTRIBUTION SYSTEMS PLUMBING Water Treatment Plant Water Distribution System Sewage & Drainage Collection Systems Wastewater Treatment Plant Gas Distribution System HEATING Fuel Oil Storage & Distribution Coal Handling Sys High Temperature Water Distribution Steam Distribution & Condensate Boilers STORM SEWER Well Systems Headwalls & Catchbasins UNDERGROUND TRANSPORT	ELECTRICAL Switchyards Substations Overhead Transmission System Underground Transmission System Lighting Communications/ Security UTILITY DISTRIBUTION INFRA Steel Towers & Poles Precast Concrete Poles Wood Poles Tower & Pole Foundations Utility Service Tunnels Utility Service Tunnels - Damp proofing / Waterproofing Concrete Support Pads TUNNELS RAILWAYS & ROLLING STOCK Transmission System Trackwork Signals & Comm. FOUNTAINS & POOLS SECURITY GATES & FENCES BRIDGES & ABUTMENTS	

SHADING CASES INSPECTOR TYPE

*Civil Structural / Roof*

*Electrical*

*Mechanical*

## DOE UNIFORMAT II - WBS Condensed Listing

MAJOR GROUP ELEMENTS									
	Group Elements								
	<i>Individual Elements</i>								
		CONTACT INFORMATION, MEMBERSHIP PRICING , MULTIPLE URLs							
A. SUBSTRUCTURE									
	A 10 Foundations			DATA SHEET					
	A 20 Substructure			DATA SHEET					
B. SHELL									
	B 10 Super Structure			DATA SHEET					
	B 20 Exterior			DATA SHEET					
	B 30 Roofing			DATA SHEET					
C. INTERIORS									
	C 10 Partitions			DATA SHEET					
	C 20 Stairs			DATA SHEET					
	C 30 Interior			DATA SHEET					
D. SERVICES									
	D 10 Conveying Systems			SPECIALTY INSPECTION .					
	D 20 Plumbing Systems			DATA SHEET					
	D 30 Mechanical Systems			DATA SHEET					
	D 40 Fire Protection			SPECIALTY INSPECTION					
	D 50 Electrical Systems			DATA SHEET					
F. SPEC. CONST.									
	F 10 Specialty Systems			SPECIALTY INSPECTION					
	F 20 Specialty Constr. Demo			SPECIALTY INSPECTION					
G. SITEWORK									
	G 10 Preparation			NEW CONSTRUCTION					
	G 20 Site Improvements			DATA SHEET					
	G 30 Util Dist Mechanical			DATA SHEET					
	G 40 Util Dist Electrical			DATA SHEET					
	G 90 Site			SPECIALTY INSPECTION					

# Expectations...and.. How you can help

- Use industry standard best practices
- Make industry standard, inspection processes easily available for the field to use
- Industry or others will maintain and update their data periodically
- Invite EFCOG input to recommend best practices and substitute standards
- Make it simple and useable
- Will not attempt to answer all inspection needs
- Avoid packaging special inspections

# Results thus far....

*EXAMPLES of :*

- *LITERATURE REVIEWED*
- *LARGE PROPERTY HOLDERS REVIEWED*
- *PROFESSIONAL ORGANIZATIONS or WEB-SITES REVIEWED*

## LITERATURE REVIEWED

- Handbook of Facility Assessment *Author: James E. Piper*
- The Facilities Audit *Author: Harvey H. Kaiser*
- Maintenance Management Audit: A Step-By-Step Workbook to Better Your Facility's Bottom Line *Author: Harvey H. Kaiser*
- Facility Inspection Field Manual *Author: Bernard T. Lewis, Richard Payant*
- Property Condition Assessments *Author: Sam A. A. Kubba*
- Means Facilities Maintenance Standards *Author: Roger W. Liska*
- Inspection of Shore Facilities *Author: NAVFAC MO 322 Vol II*
- Managing the Facilities Portfolio: A Practical Approach to Institutional Facility Renewal and Deferred Maintenance: *Author: Sean C. Rush*
- Educational Facilities Professional's Practical Guide to Reducing the Campus Carbon Footprint/Sustainability Guide

## LARGE PROPERTY HOLDERS REVIEWED

- *US Marine Corps uses Builder;*
- *FBI Lab Quantico uses Builder;*
- *NASA uses proprietary system;*
- *FAA uses MARS;*
- *UNC uses Vanderweil Facility Advisors*
- *UMass is soliciting a comprehensive facility management system*
- *State of VA University System uses a centrally managed contractor operated Condition Assessment System.*

*Document of interest discovered:*

*Condition Assessment Aspects of an Asset Management Program,  
ERDC/CERL , JAN 2008, SR-08-1, 146 pgs.*

# PROFESSIONAL ORGANIZATIONS or WEB-SITES REVIEWED

## EXAMPLES

- APPA, <http://www.APPA.org/>
- National Association of Sewer Service Companies (NASSCO), <http://www.nassco.org>
- Publication -- Manual of Practices and Inspector's Handbook
- National Utilities Locating Contractors Association (NULCA), <http://www.nulca.org>
- Underground Utility and Leak Locators Association (UULLA), <http://www.uulla.org>
- International Facilities Management Association (IFMA), <http://www.ifma.org>
- National Association of College and University Business Officers (NACUBO), <http://www.nacubo.org>
- Applied Management Engineering, Inc.. (AME) <http://www.ameinc.biz>
- Building News, (BNi), <http://www.bnibooks.com>
- British Institute of Facilities Management (BIFM), <http://www.bifm.org.uk>
  - The URL for BIFM where the discussions are listed is <http://networkwithbifm.org.uk>

No significant documents found to support this survey from:

- Center for Facilities Research
- Institute for Facility Management
- Building Owners and Managers Association (BOMA)

# Concluding thoughts....

- Your input and ideas are important to us and we will need your input and interaction to make a significant improvement to the process



# Concluding thoughts....

- We want to provide a ready resource that is easily accessible, on target, current, informative, and directly usable in achieving quality facility condition assessments



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## ....QUESTIONS....

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