




Welcome to the



BUILDER
— SUMMIT —

FEBRUARY 7TH, 2018 | San Antonio Texas

REMOTE ATTENDEES
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BUILDER
— SUMMIT —

Interactive Reporting

Showcase consoles like Tableau and Microsoft Power BI that can interact with BUILDER data to provide powerful visualization and analysis. Insight also to be provided on the direction of interactive reporting for the Enterprise SMS.

Presented by Matthew Walters & Kurt Sorensen





Data Analytics Needs

- Standard reports have limited sorting and filtering
- Custom reports are fixed displays
- Outside data sources add huge value
- Users want interactive consoles

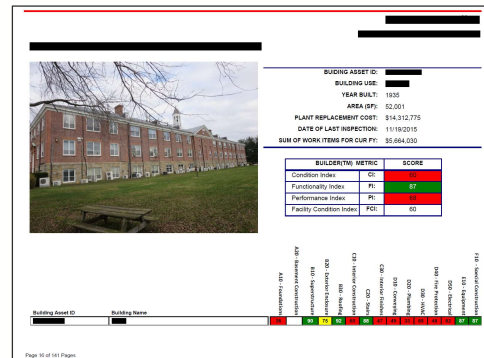
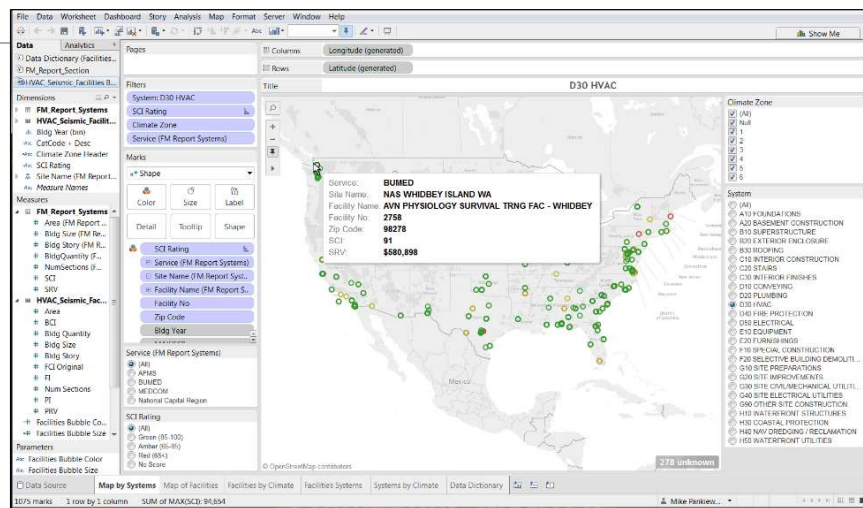
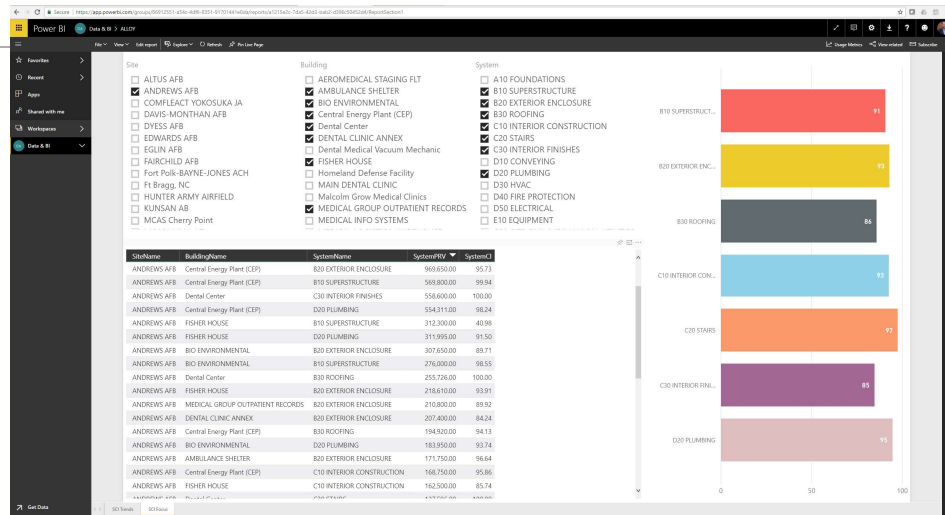


Tableau - with GIS





Power BI – Online Dashboard



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Historical Tracking Needs

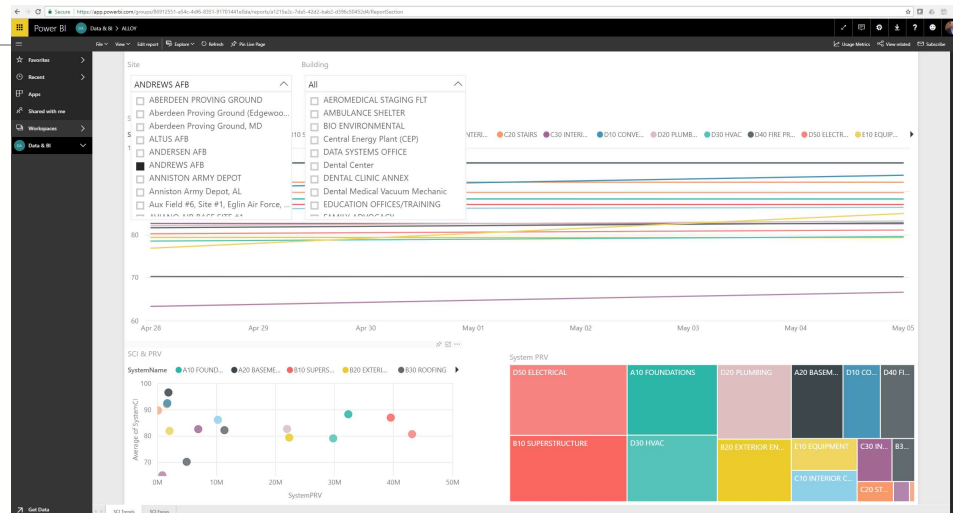
- BUILDER has a great “mind” for predicting the future but limited “memory” of the past
- People are looking for BUILDER to answer more than just what are my future investment needs. These questions require BUILDER to remember about sections that have been deleted and the history of key performance metrics.

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Data Warehouse Trends



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The Possibilities of Memory

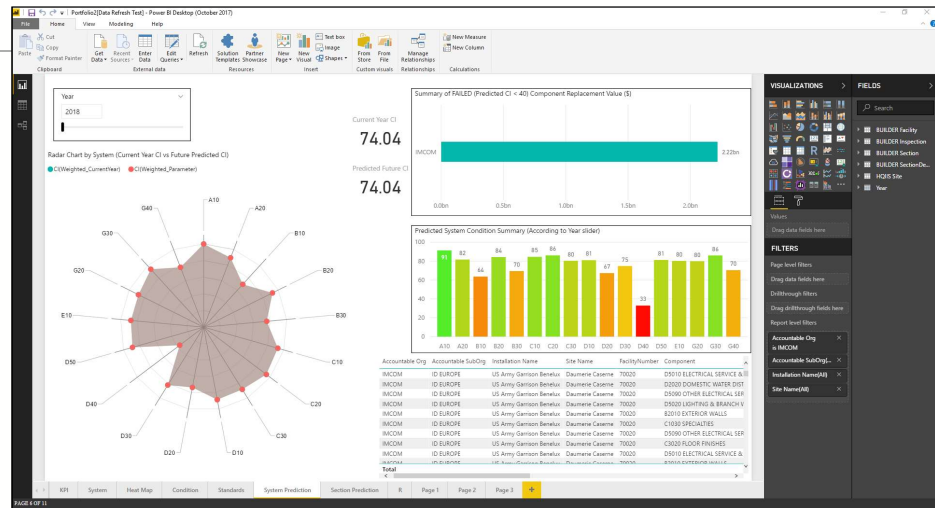
- What questions would you ask if BUILDER had a full section history?
- How could you shape policy if you could create compelling visuals?
- How much could be saved by identifying trends early?

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CERL Power BI Example

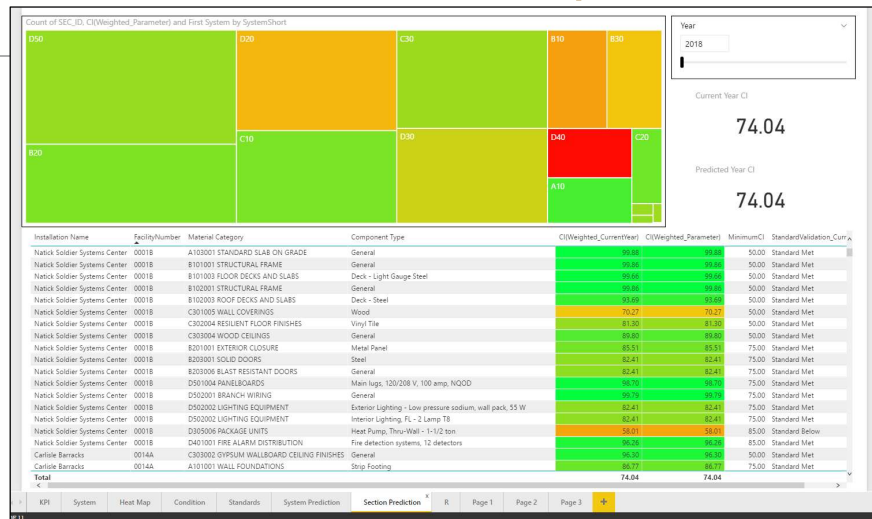


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CERL Power BI Example

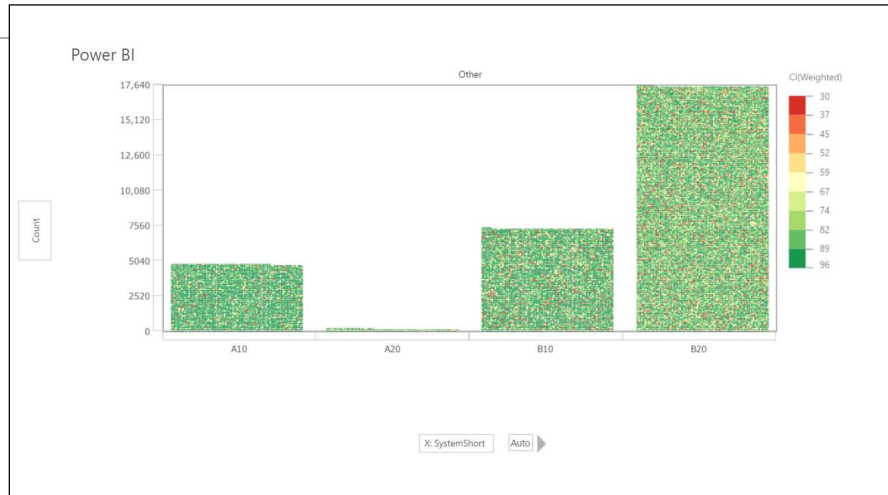


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CERL Power BI Example

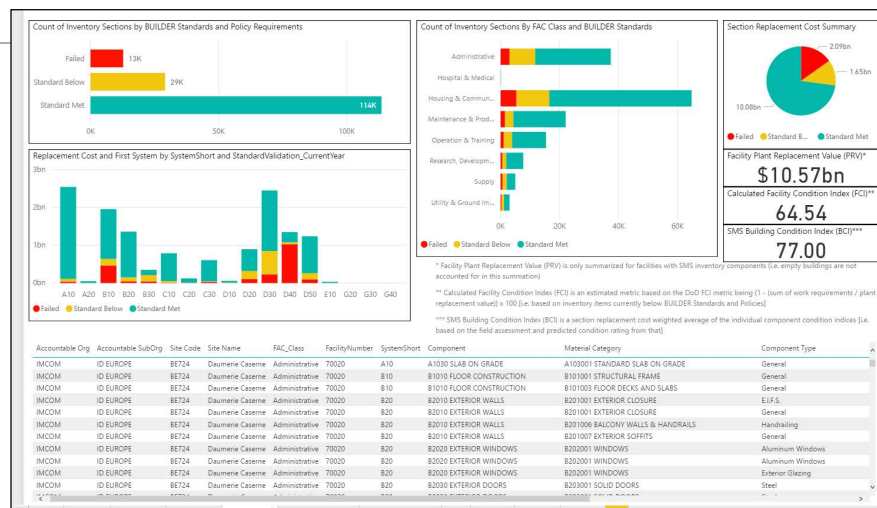


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1.1



CERL Power BI Example



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1.2



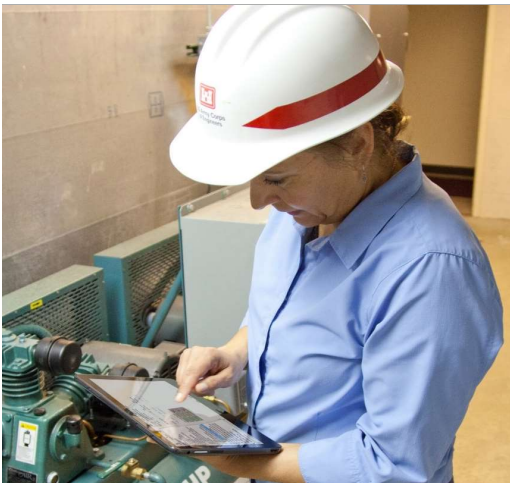
BUILDER Release Cycle Update

Presentation to share progress on new work on bug fixes, speed optimization and product enhancements.

Presented by Matthew Walters



BUILDER Software Updates



- Bug Fix Contract
- BUILDER Features from Working Committee Priority List
- Database Optimization
- Custom Report Contract (Currently USAF only Task Order)
- HelpDesk Contract
- Software development/stabilization Coordination



BUILDER Software Updates

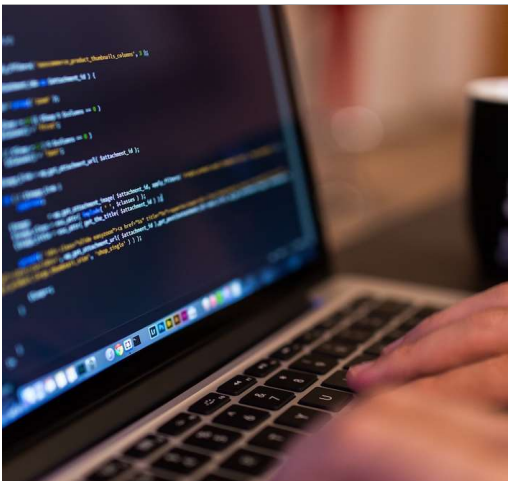


- Objective: Formal contracting method of eliminating defects from BUILDER SMS
- Format: Various sizes of “Bugs” based on the level of effort for resolution
- (14) Host of known issues named initially
- (23) Ability to later name defects in the different level of effort categories
- This ability to buy defect remediation time up front will greatly increase our response time for resolving software defects

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BUILDER Named Bug List



- Component Section Cost Book Edits
- Work Plan Delete All Items for Site
- BRED Images with Blank Titles
- Site PRV Calculation
- Work Plan Export
- Export Scenarios Analysis Grid to Excel
- Organization Work Items
- Functionality Attachments File Types
- Scenario Error Reporting
- Work Plan Prioritization
- Distress Survey Resetting to Low
- Add Section Name to Work Item Details
- Local/Select Inventory Unlock
- Warranty in Effect Indicator

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BUILDER Features Contract

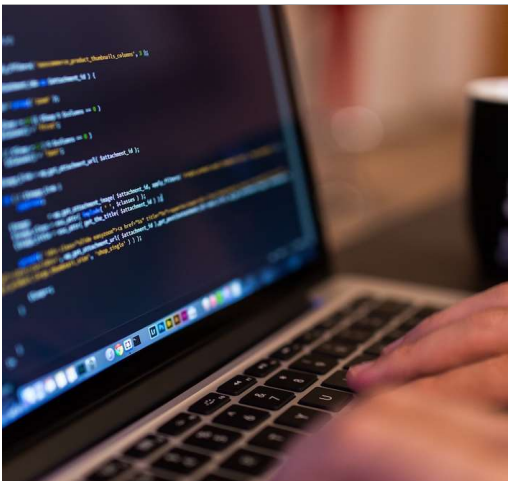


- Subject improvements derived from the BUILDER Working Committee priority rankings
- In priority order sought to contract for features that were achievable within the funding amount allocated for such work

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BUILDER Feature List



- Inventory Improvement Package
- Update Scenarios to Support POM
- Scenarios Trust Previous Fiscal Years
- Custom Report User Interface (PowerBI) Design – not a completed solution, but a design spec.

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Database Optimization Contract

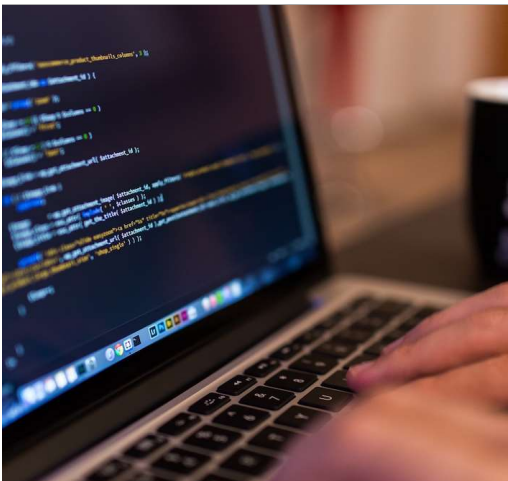


- Contract to remediate BUILDER Database performance issues exposed by increased data volume
- Heavy documentation required to provide lessons learned guide for application within ESMS

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Custom Report Contract



- Various classifications of Reports based on the level of effort to create and/or modify an existing report
- Initially reports purchased for contractor to develop as defined by AFCEC/CERL

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Software Development Coordination



- Senior federal computer science resource taking on all development oversight
- Pushing consistency throughout development cycle (code branching strategy through production deployment)
- Integrated automated testing in build process
- Bottom line objectives: more stable releases of BUILDER, predictable release contents, and eliminate quality regression

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BUILDER Release Schedule

- 3.3.14 – February 2018 - Security Patch
- 3.4 – May 2018
 - Service Life Book Improvements
 - Revised Data Structure for Cost Storage
 - Component-Section Status Field
 - Custom Configuration of Building Templates
 - Building Summary Screen Additions and Alterations
 - Local/Selective Inventory Unlock
 - Scenarios Trust Previous Fiscal Years
 - Export Scenario Analysis Grid to Excel
 - Functionality Attachments File Types (PDF)
 - Add Section Name to Work Item Details
 - Organization Work Items
 - Warranty in Effect Indicator
 - Work Plan Delete All Items for Site
 - Scenario Error Reporting
 - Work Plan Prioritization (all years)
- 3.5 – Fall 2018
 - Remaining Features selected by federal BUILDER Working Committee
 - Additional Software Defect Fixes

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Next Round of BUILDER Development



- New list of proposed improvements to BUILDER for Fed Working Group to rank/prioritize
- Fed only web-meeting proposed following BUILDER Summit and feature list review window
- Service/Agency reps provide ranking input
- BUILDER Working Committee Chair to tabulate, sort, and distribute
- Improvements contracted for development in priority order subject to available funds

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Sustainment Lessons Learned

Many users are transitioning from initial implementation to sustainment of the system. Representatives will share key learnings and areas of challenge.

Presented by Kurt Sorensen





USDA: Missing Work Items

The Problem

- When running work plans for the next fiscal year, the FCI improved without users modifying work items on a building
- We had to solve the problem of missing work items because the work configuration had not changed

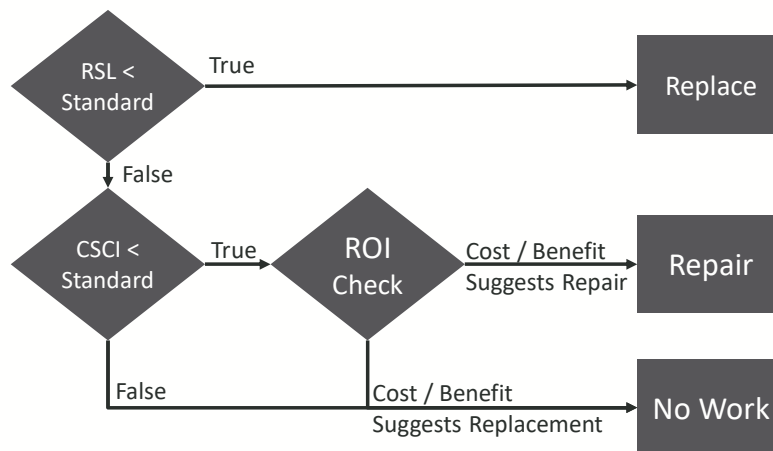
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2.5



USDA: Missing Work Items

Work Logic

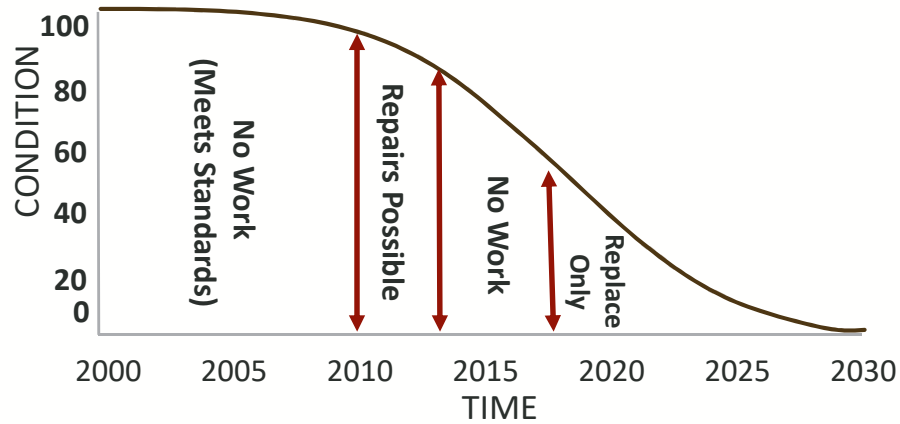


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USDA: Missing Work Items

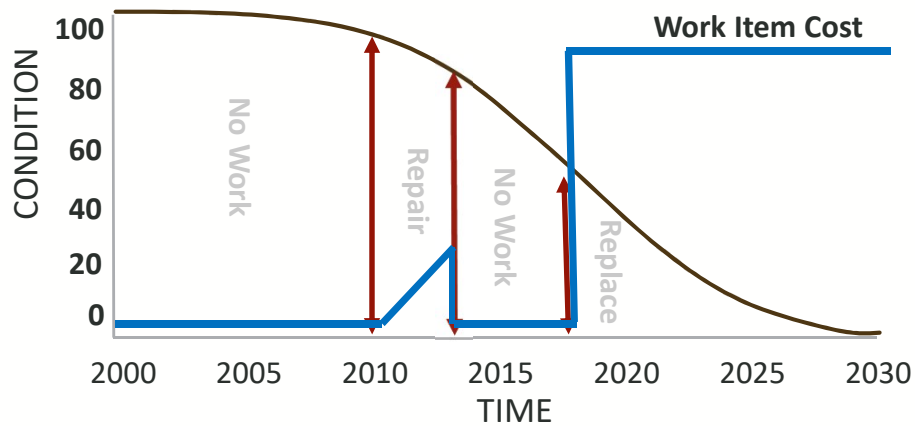


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USDA: Missing Work Items



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DHA: Fiscal Year Roll-Over

Problem: Work Item Status Lost after FY Change

- Assessment complete and Scenarios are used to create work plans
- Sustainment effort required teams to update work item status to get accurate FCI values
- After Oct 1, the “Copy Current FY Work Items” did not see the 2017 status updates

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Work Item Status Impact on FCI

Not Included in FCI

- Funded
- Budgeted
- Funded (Service Call)
- Funded (Special Project)
- In Progress
- In Design
- Complete
 - closes out work item

Included in FCI

- Awaiting Funds
- Canceled
- Deferred
- On hold
- Awaiting Funds (Special Project)
- Awaiting Contract Award

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3.0



CERL SMS Study Update

PRV Adjustments

Mike Grussing



Facility PRV adjustment

Idea:

Even across facilities in the same facility analysis category (FAC), differences exist in design and layout, materials, and complexity

These differences can drive variations in replacement cost not captured by current models

Can we use BUILDER data to adjust for these variations?



Facility Condition Index

$$FCI = 100 \times (1 - \text{Work Needs} / \text{PRV})$$

Work Needs

- Bottom up calculation: Sum of Component Repair/Replace work Items
- Based on Component inventory for a specific facility

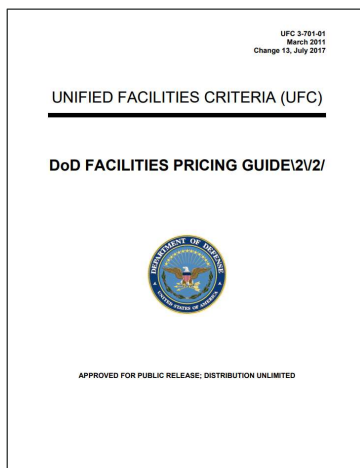
PRV

- Macro-level planning metric: Based on broad facility category type and size
- Not intended for individual facilities

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Plant Replacement Value (UFC 3-701)



Plant Replacement Value =

- Facility Quantity
- x Replacement Unit Cost (based on FAC)
- x Area Cost Factor (varies based on geographic location)
- x Historical Records Adjustment (1.05 if historic facility)
- x Planning and Design Factor (1.13 medical/1.09 otherwise)
- x SIOH Factor (1.057 CONUS/1.065 OCONUS)
- x Contingency factor (1.05)



Replacement Unit Costs

5B - HIGH TECH TRAINING BLDG									
Normalized at 56,000									
Lowest Unit Cost	Highest Unit Cost	Average Unit Cost	Median Unit Cost	Lowest Unit Cost for 1.5 Standard Deviation	Highest Unit Cost for 1.5 Standard Deviation	N Size	Bid Count	Average	
\$120.80	\$578.61	\$302.48	\$309.09	\$97.94	\$507.03	9	6	55,557	
Project Number	Project Name	Facility Name	Div/Dis	Installation	FAC Code	Bid Count	Category Code	Quantity	
070024	Regional Simulation Center	Mission Training Complex	NWD / NWK	Fort Leavenworth	1724	5	17213	36,210.00 SF	
NUEX 090000	P-35 ACADEMIC TRAINING CENTER	SPD / SPL	Lake Air Force Base		1721	11	171212	125,279.00 SF	
654216	ARCROW TRAINING Facility	High Bay Training for Simulators	ATL / NSW	Ventura City - Ft Mugu Naval Base	1721	7	17135	31,334.00 SF	
64815	Mission Command Training Center	SWD / SVT	50th Regional Readiness Command - Arkansas-Army Reserve Center, Fort Sill	1724	3	17213	46,060.00 SF		
Q8EU1030 08	C-130J Flight Simulator Facility	SAD / SAS	Moody Air Force Base	1721	1	171212	26,700.00 SF		
602280	PE24 P-8A TRAINING FACILITY	High Bay Training for Simulators	ATL / NSE	Jacksonville Naval Air Station	1721	10	17135	56,287.00 SF	
64760	FY11 MCA INKATNO Training Simulator Building Motion-Based)	POD / POH	Schofield Barracks	1724	13	17211	35,770.00 SF		
76958	Battle Command Training Center (USASOC)	SAD / SAS	Fort Bragg - Fort Bragg, North Carolina	1724	5	17213	45,936.00 SF		
1142017	P100 NUCLEAR POWER OPERATIO N TRAINING FACILITY	OPERATIONAL TRAINER FAC	ATL / NSE	Kings Bay Naval Submarine Base	1721	1	17135	94,453.00 SF	

Table 2: Facility Unit Costs for Military Construction									
Unit Costs for Military Construction									
FACILITY TYPE	Reference size (gross m2)	Oct 2014 unit cost (GUC) (\$/m2)	Reference Size (gross SF)	Oct 2014 unit cost (GUC) (\$/SF)	Standard Deviation (\$/SF)	Standard Deviation /GUC pct (%)	Number of Projects		
COMMUNICATIONS BUILDINGS:									
SATELLITE COMMUNICATIONS CENTER	2,415	3,750	26,000	348	124	36	3		
COMMUNICATIONS FACILITY	1,301	3,816	14,000	355	64	18	3		
AIRCRAFT OPERATIONS BUILDINGS:									
AIRCRAFT OPS FACILITY WITHOUT TOWER	2,323	2,885	25,000	268	75	28	13		
CONTROL TOWER (STAND-ALONE)	VM*	11,569	VF*	37,957	17,818	47	3		
AIRFIELD FIRE & RESCUE STATION	1,301	3,245	14,000	301	27	9	3		
(CENTRAL FIRE ALARM SYSTEM NOT INCL)									
HEADQUARTERS/OPERATIONS BUILDINGS:									
COMPANY LEVEL (LOWEST LEVEL)	3,252	2,157	35,000	200	40	20	11		
SQUADRON BATTALION HQS (MID LEVEL)	2,323	2,758	25,000	256	91	36	9		
BRIGADE/DIVISION WING HQS (UPPER LEVEL)	3,437	3,019	37,000	280	67	24	9		
ACADEMIC INSTRUCTION BUILDINGS:									
GENERAL INSTRUCTION (LECTURE CLASSRM)	4,191	2,545	40,000	227	42	15	9		
PE24 P-8A TRAINING FACILITY	5,203	3,725	55,000	321	135	45	8		
APPLIED INSTRUCTIONS (HANDS ON TRNG)	3,056	2,459	33,000	229	61	27	8		
ARMED FORCES RESERVE CENTER (see note above)	4,274	2,119	46,000	197	39	20	27		
MAINTENANCE HANGARS:									
GENERAL PURPOSE, LOW-MID BAY, UPTO 40 FT HIGH	5,946	2,797	64,000	250	47	18	8		
HIGH BAY MAINTENANCE, OVER 40 FT HIGH	6,689	2,559	72,000	238	65	27	9		
AIRCRAFT CORROSION CONTROL MAINTENANCE									
MILITARY VEHICLE MAINTENANCE, LARGE (>21,000 SF)	4,459	2,077	48,000	193	30	16	11		
MILITARY VEHICLE MAINTENANCE, SMALL (<21,000 SF)									
MAINTENANCE SHOPS:									
AIRCRAFT AVIONICS	539	3,900	5,800	364	149	41	4		
PARACHUTE AND DINGHY MAINTENANCE									
AIRCRAFT MACHINE SHOP									
ELECTRONICS SHOP, DEPOT LEVEL									
WAREHOUSE STORAGE FACILITIES:									
GENERAL PURPOSE - SMALL (<15,000 SF), LOW BAY (STACK HEIGHT <16 FT)	520	1,421	5,600	132	82	62	40		
GENERAL PURPOSE - LARGE (>15,000 SF), LOW BAY (STACK HEIGHT <16 FT)	3,437	1,430	37,000	133	42	32	8		
STORAGE BUILDING - LARGE (>15,000 SF), HIGH BAY (STACK HEIGHT >16 FT)	390	1,480	4,200	138	102	74	3		
GENERAL PURPOSE MAGAZINE W/O CRANE	223	2,290	2,400	212	74	35	3		
HIGH EXPLOSIVE MAGAZINE	74	3,501	800	325	55	17	4		
ARMORY/WEAPONS STORAGE FACILITY	2137	2,320	23,000	216	64	30	4		
HAZARDOUS/ FLAMMABLE STORAGE, < 1,000 SF	49	2,547	530	237	25	11	3		
HAZARDOUS/ FLAMMABLE STORAGE, > 1,000 SF									



Thought experiment...

- Bldg 1: 56,000 SF General Purpose Simulator Fac. (FAC 2111)
 - RUC = \$302.00/SF
 - PRV = \$17 M
 - CRV = \$10 M
 - BCI = 90
 - Work Needs = \$1M
 - FCI = 94
- Bldg 2: 56,000 SF General Purpose Simulator Fac. (FAC 2111)
 - RUC = \$302.00/SF
 - PRV = \$17 M
 - CRV = \$25 M
 - BCI = 90
 - Work Needs = \$2.5M
 - FCI = 85



Facility Specific PRV Adjustment

1. Distribute overall Facility PRV to each system (B10, B20, D30, etc.)
 - a) Use characteristic system percentages from UFC 3-730
 - b) Results in System Replacement Value (SRV)
2. Adjust SRV for each system using the total Component Replacement Value (CRV) BUILDER inventory.
 - a) Set maximum adjustment thresholds based on standard deviation from DOD Guidance Unit Cost
 - b) Results in Adjusted System Replacement Value (SRV_a)
3. Sum SRV_a across all building systems to calculate Adjusted Plant Replacement Value (PRV_a)

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PRV Allocation to System Level

UNIFIED FACILITIES CRITERIA (UFC)

PROGRAMMING COST ESTIMATES FOR MILITARY CONSTRUCTION



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UFC 3-730-01
6 June 2011
Change 1, March 2017

UFC 3-730-01
6 May 2011
Change 1, March 2017

1/Appendix C - Ratio Of WBS Systems Cost To Facility Cost By Facility Type																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	B10	B20	B30	B40	B50	B60	B70	B80	B90	B100	B110	B120	B130	B140	B150	B160	B170	B180	B190	B200	B210	B220	B230	B240	B250	B260	B270	B280	B290	B300	B310	B320	B330	B340	B350	B360	B370	B380	B390	B400	B410	B420	B430	B440	B450	B460	B470	B480	B490	B500	B510	B520	B530	B540	B550	B560	B570	B580	B590	B600	B610	B620	B630	B640	B650	B660	B670	B680	B690	B700	B710	B720	B730	B740	B750	B760	B770	B780	B790	B800	B810	B820	B830	B840	B850	B860	B870	B880	B890	B900	B910	B920	B930	B940	B950	B960	B970	B980	B990	B1000	B1010	B1020	B1030	B1040	B1050	B1060	B1070	B1080	B1090	B1100	B1110	B1120	B1130	B1140	B1150	B1160	B1170	B1180	B1190	B1200	B1210	B1220	B1230	B1240	B1250	B1260	B1270	B1280	B1290	B1300	B1310	B1320	B1330	B1340	B1350	B1360	B1370	B1380	B1390	B1400	B1410	B1420	B1430	B1440	B1450	B1460	B1470	B1480	B1490	B1500	B1510	B1520	B1530	B1540	B1550	B1560	B1570	B1580	B1590	B1600	B1610	B1620	B1630	B1640	B1650	B1660	B1670	B1680	B1690	B1700	B1710	B1720	B1730	B1740	B1750	B1760	B1770	B1780	B1790	B1800	B1810	B1820	B1830	B1840	B1850	B1860	B1870	B1880	B1890	B1900	B1910	B1920	B1930	B1940	B1950	B1960	B1970	B1980	B1990	B2000	B2010	B2020	B2030	B2040	B2050	B2060	B2070	B2080	B2090	B2100	B2110	B2120	B2130	B2140	B2150	B2160	B2170	B2180	B2190	B2200	B2210	B2220	B2230	B2240	B2250	B2260	B2270	B2280	B2290	B2300	B2310	B2320	B2330	B2340	B2350	B2360	B2370	B2380	B2390	B2400	B2410	B2420	B2430	B2440	B2450	B2460	B2470	B2480	B2490	B2500	B2510	B2520	B2530	B2540	B2550	B2560	B2570	B2580	B2590	B2600	B2610	B2620	B2630	B2640	B2650	B2660	B2670	B2680	B2690	B2700	B2710	B2720	B2730	B2740	B2750	B2760	B2770	B2780	B2790	B2800	B2810	B2820	B2830	B2840	B2850	B2860	B2870	B2880	B2890	B2900	B2910	B2920	B2930	B2940	B2950	B2960	B2970	B2980	B2990	B3000	B3010	B3020	B3030	B3040	B3050	B3060	B3070	B3080	B3090	B3100	B3110	B3120	B3130	B3140	B3150	B3160	B3170	B3180	B3190	B3200	B3210	B3220	B3230	B3240	B3250	B3260	B3270	B3280	B3290	B3300	B3310	B3320	B3330	B3340	B3350	B3360	B3370	B3380	B3390	B3400	B3410	B3420	B3430	B3440	B3450	B3460	B3470	B3480	B3490	B3500	B3510	B3520	B3530	B3540	B3550	B3560	B3570	B3580	B3590	B3600	B3610	B3620	B3630	B3640	B3650	B3660	B3670	B3680	B3690	B3700	B3710	B3720	B3730	B3740	B3750	B3760	B3770	B3780	B3790	B3800	B3810	B3820	B3830	B3840	B3850	B3860	B3870	B3880	B3890	B3900	B3910	B3920	B3930	B3940	B3950	B3960	B3970	B3980	B3990	B4000	B4010	B4020	B4030	B4040	B4050	B4060	B4070	B4080	B4090	B4100	B4110	B4120	B4130	B4140	B4150	B4160	B4170	B4180	B4190	B4200	B4210	B4220	B4230	B4240	B4250	B4260	B4270	B4280	B4290	B4300	B4310	B4320	B4330	B4340	B4350	B4360	B4370	B4380	B4390	B4400	B4410	B4420	B4430	B4440	B4450	B4460	B4470	B4480	B4490	B4500	B4510	B4520	B4530	B4540	B4550	B4560	B4570	B4580	B4590	B4600	B4610	B4620	B4630	B4640	B4650	B4660	B4670	B4680	B4690	B4700	B4710	B4720	B4730	B4740	B4750	B4760	B4770	B4780	B4790	B4800	B4810	B4820	B4830	B4840	B4850	B4860	B4870	B4880	B4890	B4900	B4910	B4920	B4930	B4940	B4950	B4960	B4970	B4980	B4990	B5000	B5010	B5020	B5030	B5040	B5050	B5060	B5070	B5080	B5090	B5100	B5110	B5120	B5130	B5140	B5150	B5160	B5170	B5180	B5190	B5200	B5210	B5220	B5230	B5240	B5250	B5260	B5270	B5280	B5290	B5300	B5310	B5320	B5330	B5340	B5350	B5360	B5370	B5380	B5390	B5400	B5410	B5420	B5430	B5440	B5450	B5460	B5470	B5480	B5490	B5500	B5510	B5520	B5530	B5540	B5550	B5560	B5570	B5580	B5590	B5600	B5610	B5620	B5630	B5640	B5650	B5660	B5670	B5680	B5690	B5700	B5710	B5720	B5730	B5740	B5750	B5760	B5770	B5780	B5790	B5800	B5810	B5820	B5830	B5840	B5850	B5860	B5870	B5880	B5890	B5900	B5910	B5920	B5930	B5940	B5950	B5960	B5970	B5980	B5990	B6000	B6010	B6020	B6030	B6040	B6050	B6060	B6070	B6080	B6090	B6100	B6110	B6120	B6130	B6140	B6150	B6160	B6170	B6180	B6190	B6200	B6210	B6220	B6230	B6240	B6250	B6260	B6270	B6280	B6290	B6300	B6310	B6320	B6330	B6340	B6350	B6360	B6370	B6380	B6390	B6400	B6410	B6420	B6430	B6440	B6450	B6460	B6470	B6480	B6490	B6500	B6510	B6520	B6530	B6540	B6550	B6560	B6570	B6580	B6590	B6600	B6610	B6620	B6630	B6640	B6650	B6660	B6670	B6680	B6690	B6700	B6710	B6720	B6730	B6740	B6750	B6760	B6770	B6780	B6790	B6800	B6810	B6820	B6830	B6840	B6850	B6860	B6870	B6880	B6890	B6900	B6910	B6920	B6930	B6940	B6950	B6960	B6970	B6980	B6990	B7000	B7010	B7020	B7030	B7040	B7050	B7060	B7070	B7080	B7090	B7100	B7110	B7120	B7130	B7140	B7150	B7160	B7170	B7180	B7190	B7200	B7210	B7220	B7230	B7240	B7250	B7260	B7270	B7280	B7290	B7300	B7310	B7320	B7330	B7340	B7350	B7360	B7370	B7380	B7390	B7400	B7410	B7420	B7430	B7440	B7450	B7460	B7470	B7480	B7490	B7500	B7510	B7520	B7530	B7540	B7550	B7560	B7570	B7580	B7590	B7600	B7610	B7620	B7630	B7640	B7650	B7660	B7670	B7680	B7690	B7700	B7710	B7720	B7730	B7740	B7750	B7760	B7770	B7780	B7790	B7800	B7810	B7820	B7830	B7840	B7850	B7860	B7870	B7880	B7890	B7900	B7910	B7920	B7930	B7940	B7950	B7960	B7970	B7980	B7990	B8000	B8010	B8020	B8030	B8040	B8050	B8060	B8070	B8080	B8090	B8100	B8110	B8120	B8130	B8140	B8150	B8160	B8170	B8180	B8190	B8200	B8210	B8220	B8230	B8240	B8250	B8260	B8270	B8280	B8290	B8300	B8310	B8320	B8330	B8340	B8350	B8360	B8370	B8380	B8390	B8400	B8410	B8420	B8430	B8440	B8450	B8460	B8470	B8480	B8490	B8500	B8510	B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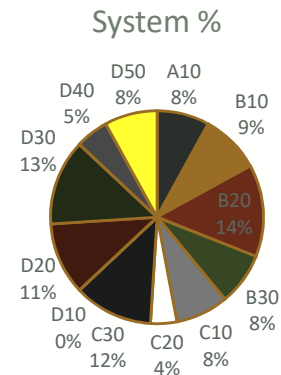
Example...

124k SF Maintenance Hangar:

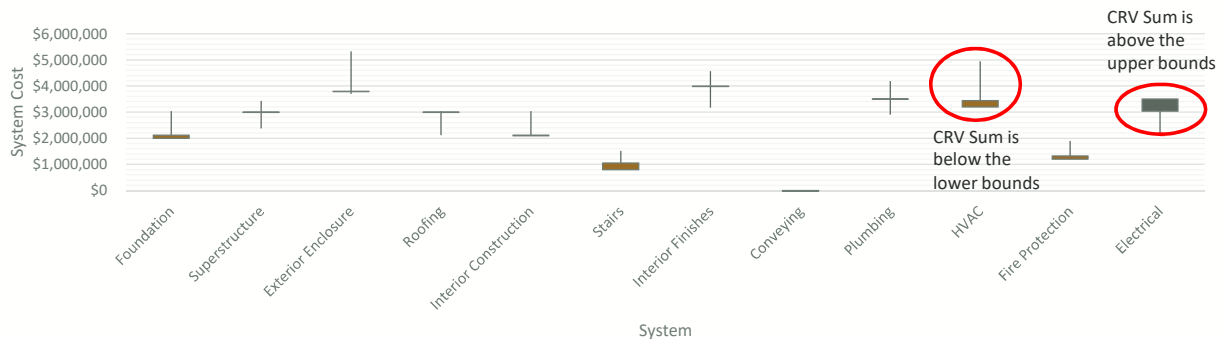
Guidance Unit Cost = \$260/SF, GUC Standard Deviation = +/-18%

PRV = \$32,240,000, $PRV_a = \$30,389,440$

System	Description	% PRV	SRV	Sum CRV	Delta	SRV _a
A10	Foundation	8%	\$2,579,200	\$2,000,000	-22%	\$2,114,944
B10	Superstructure	9%	\$2,901,600	\$3,000,000	3%	\$3,000,000
B20	Exterior Enclosure	14%	\$4,513,600	\$3,800,000	-16%	\$3,800,000
B30	Roofing	8%	\$2,579,200	\$3,000,000	16%	\$3,000,000
C10	Interior Construction	8%	\$2,579,200	\$2,100,000	-19%	\$2,114,944
C20	Stairs	4%	\$1,289,600	\$800,000	-38%	\$1,057,472
C30	Interior Finishes	12%	\$3,868,800	\$4,000,000	3%	\$4,000,000
D10	Conveying	0%	\$0	\$0	0%	\$0
D20	Plumbing	11%	\$3,546,400	\$3,500,000	-1%	\$3,500,000
D30	HVAC	13%	\$4,191,200	\$3,200,000	-24%	\$3,436,784
D40	Fire Protection	5%	\$1,612,000	\$1,200,000	-26%	\$1,321,840
D50	Electrical	8%	\$2,579,200	\$3,500,000	36%	\$3,043,456
$PRV_a =$						\$30,389,440



System Replacement Value Adjustment Limits





Additional Considerations

What if a system is not inventoried in BUILDER?

- If a building system is not applicable, value is excluded from PRV_a
 - Example: D30 HVAC in an unheated warehouse
 - Denoted if entire system is removed from BUILDER inventory
- If system is present, but not inventoried in BUILDER, value IS included in PRV_a
 - Includes partially inventoried systems



Proposed BUILDER Output

Inst Code	Installation Name	Special Area	RPRD	Bldg Num	Bldg Name	Const Type	Floors	Area	Const Year	PRV	CRV	PRVa
M80169	MCAS Beaufort	Main	NFA2000011	3027	COMMUNICATIONS BUILDING	Permanent		240	2013	\$106,000	\$96,935	101,468
M80169	MCAS Beaufort	Main	NFA1000002	404	GENERATOR BLDG 150 KV	Permanent	1	1,147	1956	\$197,000	\$203,223	200,112
M80169	MCAS Beaufort	Main	NFA1000002	416	MAINTENANCE HANGAR	Permanent	1	65,209	1956	\$13,335,805	\$11,229,820	12,282,813
M80169	MCAS Beaufort	Main	NFA1000002	422	FUSE AND DETONATOR MAGAZINE	Permanent		192	1956	\$45,000	\$46,315	45,658
M80169	MCAS Beaufort	Main	NFA2000004	429	CONSOLIDATED HAZ MAT ADMIN	Permanent	1	1,702	2004	\$491,000	\$448,451	469,728
M80169	MCAS Beaufort	Main	NFA1000002	431	BOQ	Permanent	2	88,702	1957	\$25,584,000	\$20,347,666	22,965,833
M80169	MCAS Beaufort	Main	NFA1000002	555	GENERAL WHSE RI (ORG)	Permanent	1	37,063	1957	\$5,407,000	\$5,191,665	5,299,332
M80169	MCAS Beaufort	Main	NFA2000012	565B	STORAGE @ 565 COMPOUND	Permanent	1	80	1985	\$9,600	\$10,260	9,930
M80169	MCAS Beaufort	Main	NFA1000002	584	POLICE STATION PHO	Permanent		12,503	1959	\$2,775,000	\$2,122,065	2,448,833
M80169	MCAS Beaufort	Main	NFA1000002	597	STATION THEATER	Permanent	2	17,191	1959	\$3,558,000	\$2,709,816	3,133,908
M80169	MCAS Beaufort	Main	NFA1000002	608	TRANSMITTER CABLE BLDG BOX	Permanent	1	16	1959	\$7,100	\$5,835	6,468
M80169	MCAS Beaufort	Main	NFA2000012	610	BATHHOUSE	Permanent	1	3,935	1958	\$696,000	\$657,065	777,533
M80169	MCAS Beaufort	Main	NFA1000002	611	GENERAL WHSE RI (ORG)	Permanent	2	93,287	1959	\$13,608,000	\$12,128,093	12,868,048
M80169	MCAS Beaufort	Main	NFA1000002	612	GENERAL WAREHOUSE	Permanent	2	155,250	1959	\$22,647,000	\$17,101,780	19,874,380
M80169	MCAS Beaufort	Main	NFA1000002	614	CSSD 23 HEADQUARTERS	Permanent	1	11,618	1959	\$3,595,000	\$2,816,668	3,205,834
M80169	MCAS Beaufort	Main	NFA1000002	616	PW ADMINISTRATION BLDG	Permanent		12,720	1958	\$3,689,000	\$4,580,410	4,124,705
M80169	MCAS Beaufort	Main	NFA2000010	617A	HIGH VOLTAGE TRUCK SHED	Permanent	1	2,344	2012	\$527,000	\$411,090	469,045
M80169	MCAS Beaufort	Main	NFA1000002	619	GENERAL ADMIN BLDG SAFETY	Permanent	1	3,896	1958	\$1,125,000	\$1,405,038	1,255,019
M80169	MCAS Beaufort	Main	NFA1000002	631	SPORTSMENS CLUBHOUSE	Semipermanent	1	1,407	1940	\$389,000	\$325,763	357,391
M80169	MCAS Beaufort	Main	NFA1000002	658	ROICC ADMIN OFFICES	Permanent	1	9,595	1958	\$2,768,000	\$2,522,102	2,645,051
M80169	MCAS Beaufort	Main	NFA1000002	660	CORPORALS SCHOOL	Permanent		13,797	1959	\$3,492,000	\$3,488,110	3,490,055
M80169	MCAS Beaufort	Main	NFA1000002	661	VEHICLE MAINTENANCE SHP COMB	Permanent		5,382	1959	\$1,743,000	\$1,416,485	1,579,743
M80169	MCAS Beaufort	Main	NFA1000002	662	MACS2 HEADQUARTERS BLDG	Permanent		9,010	1959	\$3,036,000	\$3,037,765	3,036,693
M80169	MCAS Beaufort	Main	NFA1000002	722	RANGE OPERATIONS BLDG	Permanent	1	250	1962	\$70,000	\$58,765	64,383
M80169	MCAS Beaufort	Main	NFA1000002	728	AIRCRAFT MAINT BLDG	Permanent	2	24,141	1964	\$5,086,140	\$4,558,299	4,822,219
M80169	MCAS Beaufort	Main	NFA1000002	736	FUSE-DETONATOR MAGAZINE	Permanent		192	1964	\$45,000	\$46,315	45,658
M80169	MCAS Beaufort	Main	NFA1000002	737	FUSE-DETONATOR MAGAZINE	Permanent		192	1964	\$45,000	\$46,315	45,658
M80169	MCAS Beaufort	Main	NFA1000002	738	ABRT STOREHOUSE	Permanent	1	477	1964	\$112,000	\$92,591	102,296
M80169	MCAS Beaufort	Main	NFA1000002	740	APPROACH LIGHTING VAULT	Permanent	1	663	1964	\$114,000	\$117,955	115,977
M80169	MCAS Beaufort	Main	NFA1000002	790	BOWLING ALLEY	Permanent		12,231	1966	\$1,528,000	\$1,637,835	1,582,918
M80169	MCAS Beaufort	Main	NFA1000002	799	TWO	Permanent	1	1,518	1966	\$438,000	\$481,682	459,841
M80169	MCAS Beaufort	Main	NFA1000002	834	GUIDED MISSILE INT FACILITY	Permanent	1	7,791	1968	\$2,299,000	\$1,941,609	2,120,305
M80169	MCAS Beaufort	Main	NFA1000002	848	FUSE AND DETONATOR MAGAZINE	Permanent		192	1969	\$45,000	\$45,815	45,408
M80169	MCAS Beaufort	Main	NFA1000002	849	FUSE AND DETONATOR MAGAZINE	Permanent		192	1969	\$45,000	\$45,815	45,408
M80169	MCAS Beaufort	Main	NFA1000002	921	FLAMMABLE STORAGE BLDG	Permanent	1	180	1972	\$47,500	\$39,704	43,602
M80169	MCAS Beaufort	Main	NFA1000002	923	FLAMMABLE STORAGE BLDG	Permanent		144	1972	\$34,000	\$34,820	34,010



CERL SMS Study Update

Layaway Economic Analysis

Mike Grussing



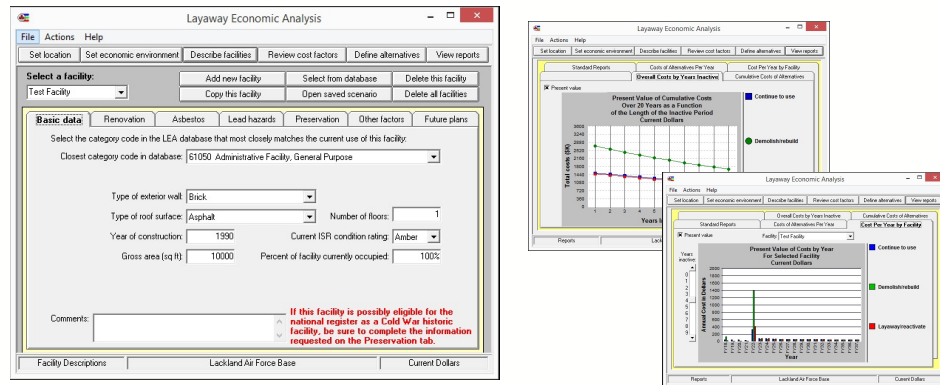
Facility Layaway Analysis

GAO-11-814, "EXCESS FACILITIES": the GAO recommended that the Department develop strategies and measures to enhance the management of excess facilities.

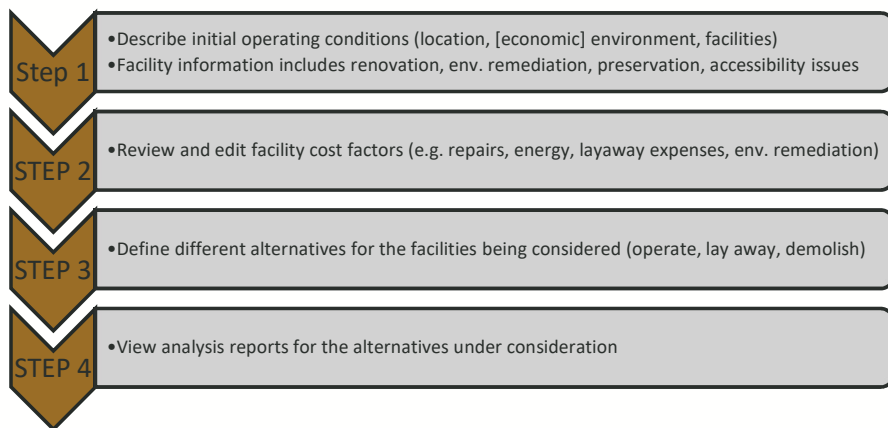
- The Objective: Use data from BUILDER SMS to help identify the best course of action for excess facilities (continue to use, layaway, demolish/replace)
- Approach: Incorporate past layaway economic analysis logic into Excel-based scenario module for integration with BUILDER Platform



Legacy LEA Tool



LEA Process





Facility Info (From BUILDER)

Basic Info	Example Value	Builder Link
Category Code	13120	Facility.CategoryCode_Link
Exterior Wall Type	Brick	Component Type
Roof Surface Type	Shingle - Asphalt	Component Type
Superstructure Type	Unreinforced Masonry	Facility.BuildingType_Link
Construction Year	1990	Facility.YearConstructed
Gross Area (SF)	1000	Facility.Quantity
Number Floors	1	Facility.Bldg_NO_Floors
Current Condition	81	Facility.BCI*

Percent **Final 1 - Facility Summary Report**

Inst Code	Installation Name	Special Area	RPUID	Bldg Num	Bldg Name	Const Type	Floors	Area	Const Year	PRV	MDI	BCI
M60169	MCAS Beaufort	Main	NFA1000002	1005	LOX STORAGE SHED	Permanent	1	600	1993	\$35,500	83	78
M60169	MCAS Beaufort	Main	NFA1000002	1007	POL OPERATIONS BLDG	Semipermanent	1	1,000	1984	\$264,453	63	75
M60169	MCAS Beaufort	Main	NFA1000002	1008	ELECTRONIC MAINTENANCE SHOP	Permanent	1	440	1984	\$71,473	73	84
M60169	MCAS Beaufort	Main	NFA1000002	1009	ELECTRONIC MAINTENANCE SHOP	Permanent	1	440	1984	\$71,473	48	84
M60169	MCAS Beaufort	Main	NFA1000002	1010	KENNEL	Permanent	1	270	1979	\$68,105	38	75
M60169	MCAS Beaufort	Main	NFA1000002	1011	STAR BASE TRAINING	Semipermanent	1	2,735	1984	\$718,000	58	80
M60169	MCAS Beaufort	Main	NFA1000002	1013	FLAMMABLE STORAGE BLDG	Permanent	1	135	1984	\$35,500	53	88
M60169	MCAS Beaufort	Main	NFA1000002	1014	FLAMMABLE STORAGE BLDG	Permanent	1	135	1984	\$35,500	53	88
M60169	MCAS Beaufort	Main	NFA1000002	1015	FLAMMABLE STORAGE BLDG	Permanent	1	135	1984	\$35,500	53	88
M60169	MCAS Beaufort	Main	NFA1000002	1016	K SPAN MWSS 273 GRD CON STR	Permanent	1	1,200	1984	\$176,000	53	88
M60169	MCAS Beaufort	Main	NFA1000002	1017	FLAMMABLE STORAGE BLDG	Permanent	1	135	1984	\$15,670	53	76



Facility Condition

System	Renovation %
Substructure	0
Superstructure	0
Roofing	100
Exterior Closure	25
Interior Construction	25
Interior Finishes	50
Plumbing	10
HVAC	10
Electrical	10
Equipment	
Conveying Systems	10

Final 2 - System Summary Report

Installation Code	Installation Name	Special Area	RPUID	Bldg Num	System	System CI
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	A10 FOUNDATIONS	93
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	A20 BASEMENT CONSTRUCTION	
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	B10 SUPERSTRUCTURE	88
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	B20 EXTERIOR ENCLOSURE	84
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	B30 ROOFING	83
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	C10 INTERIOR CONSTRUCTION	85
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	C20 STAIRS	
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	C30 INTERIOR FINISHES	83
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	D10 CONVEYING	87
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	D20 PLUMBING	96
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	D30 HVAC	87
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	D40 FIRE PROTECTION	87
M60169	MCAS Beaufort	Main	NFA10000025 0104	1130	D50 ELECTRICAL	88



Compliance Issues

- Asbestos: Exterior/Structure, Interior Finishes, HVAC/Plumbing
- Lead Hazards: HVAC/Plumbing, Exterior/Structure, Interior Finishes
- Accessibility: Install/Modify Ramps, Elevator, Lift, Enlarge Entrance, Restroom Remodeling
- Seismic: Rehabilitation for life safety
- Underground Storage Tanks



Cost Factors

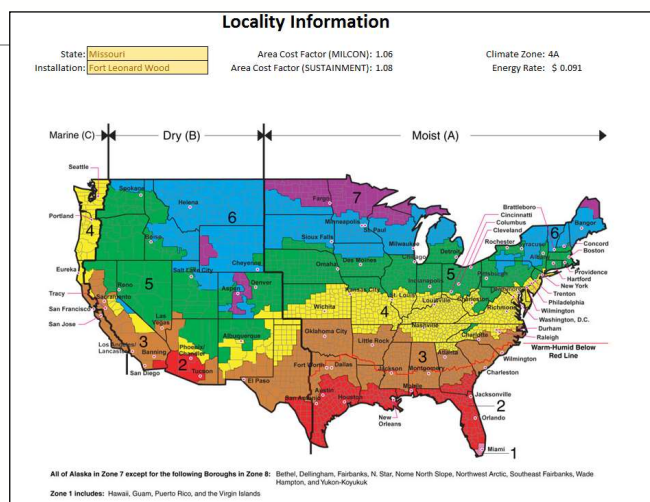
	<i>Demolish</i>	<i>Layaway/Reactivate</i>	<i>Continue to Use</i>
Layaway Activities	Layaway Pending Disposal	Initial Layaway Activities	
Demolition	Demolition/Disposal		
Replacement/Renovation	Facility Replacement	Planned Basic Renovation Renovation add-ons for preservation	Planned basic Renovation Renovation add-ons for preservation
Relocation	Relocation	Relocation of occupied portion	
Operations Costs	Maintenance Pending Disposal	Maintenance During Layaway	
	Energy for New Active Facility	Energy During Layaway	Energy at Current Occupancy
	Annual Recurring Maintenance	Energy for Reactivated Facility Annual Recurring Maintenance	Energy Costs after Renovation Annual Recurring Maintenance
Compliance Issues	Asbestos Removal	Asbestos Abatement	Asbestos Abatement
	Removal of UST	Lead Hazards Abatement	Lead Hazards Abatement
		ADA Upgrades	ADA Upgrades
		Seismic Rehabilitation	Seismic Rehabilitation
Historic Issues	Admin/coordination - Demolition	Admin/coordination - Layaway	Admin/Coordination - Renovation
	HABS/HAER Mitigation - Demolition		HABS Mitigation - Renovation
		Annual Management	Annual Management
		Historic Survey	Historic Survey



Basic Assumptions

Cost Factors

- Cost Escalation (Construction, Energy)
- Discount Rate
- OH&P
- Energy Factors
- Climate Zone
- Energy Cost Consumption (\$/SF)
- Inactive Bldg. Energy Consumption (%)



Facility Information

Facility Information

Basic Information

Facility (FAC) Code: **0102**
 Exterior Wall Type: **Brick**
 Roof Surface Type: **Shingle - Asphalt**
 Superstructure Type: **Concrete Moment Frame**
 Construction Year: **1991**
 Gross Area (SF): **1000**
 Number Floors: **1**
 Current Condition (FCI): **70**
 Percent Occupied: **30%**

Category (CAT) Code: 14182
 Facility Type: **LARGE UNIT HEADQUARTERS BUILDING**
 ASHRAE 100K: **3A**
 EUI (kWh/ft²-yr): **16.71**
 Energy Costs per year: \$ **1,575.29**

System Renovation Needed (%)

System Renovation Needed (%)	System Renovation Square Foot Costs
A Substructure: 25	\$ 8.02
B10 Superstructure: 25	\$ 13.05
B20 Exterior Closure: 25	\$ 2.99
B30 Roofing: 25	\$ 8.57
C10 Interior Construction: 25	\$ 9.51
C30 Interior Finishes: 25	\$ 7.08
Specialties: 25	\$ 0.63
Plumbing: 25	\$ 2.28
D30 HVAC: 25	\$ 10.06
Special Mechanical: 25	\$ -
Electrical: 25	\$ 7.45
Special Electrical: 25	\$ 2.74
Equipment: 25	\$ 1.18
Conveying Systems: 25	\$ -
Site and Grounds: 25	\$ 3.36
Parking: 25	\$ 2.52

Future Plans

Heat/Cool to control climate during layaway: **100**
 Remove asbestos before layaway: **100**
 Remove lead hazards before layaway: **100**
 Earliest year to demolish: **2019**
 Percent facility to be occupied during continued use: **30%**
 Probability facility will be needed in 10 years: **100%**
 Probability facility will be adequate when needed again: **100%**



Cost Factors

Cost Information												
Cost Category	Demolish				Layaway/Reactivate				Continue to Use			
	Item	Estimated	Actual	Unit	Item	Estimated	Actual	Unit	Item	Estimated	Actual	Unit
Layaway Activities	Layaway Pending Disposal	\$ 0.11	\$ 0.20	S/SF	Initial Layaway Activities	\$ 0.80		S/SF		N/A		
Demolition	Demolition/Disposal	\$ 12.33		S/SF		N/A				N/A		
Replacement/Renovation	Facility Replacement	\$ 297.26		S/SF	Planned basic Renovation	\$ 70.70		S/SF	Planned basic Renovation	\$ 70.70		S/SF
					Renovation add-ons for preservation	\$ -		S/SF	Renovation add-ons for preservation	\$ -		S/SF
Relocation	Relocation	\$ 0.34	\$ 2.00	S/SF	Relocation of occupied portion	\$ 0.34	\$ 2.00	S/SF		N/A		
Operations Costs	Maintenance Pending Disposal	\$ 0.03	\$ 0.50	S/SF/Year	Maintenance During Layaway	\$ 0.17	\$ 0.25	S/SF/Year				
	Energy for new Active Facility	\$ 1.58		S/SF/Year	Energy During Layaway	\$ -		S/SF/Year	Energy at Current Occupancy	\$ 1.37		S/SF/Year
	Annual Recurring Maintenance	\$ 4.20		S/SF/Year	Energy for Reactivated Facility	\$ 1.89		S/SF/Year	Energy Costs after Renovation	\$ 1.89		S/SF/Year
Compliance Issues	Asbestos Removal			S/SF	Annual Recurring Maintenance	\$ 4.20	\$ 2.00	S/SF/Year	Annual Recurring Maintenance	\$ 4.20	\$ 2.00	S/SF/Year
	Removal of UST			\$	Asbestos Abatement			S/SF	Asbestos abatement			S/SF
					Lead hazards Abatement			S/SF	Lead hazards abatement			S/SF
					ADA Upgrades			S/SF	ADA upgrades			S/SF
					Seismic Rehabilitation			S/SF	Seismic rehabilitation			S/SF
Historic Issues	Admin/coordination - Demolition			\$	Admin/coordination - Layaway			\$	Admin/Coordination - Renovation			\$
	HABS/HAER Mitigation - Demolition			\$					HABS Mitigation - Renovation			\$
					Annual Management			\$	Annual Management			\$
					Historic Survey			\$	Historic Survey			\$



Analysis and Output

Reports

Reactivation Period (years): 5

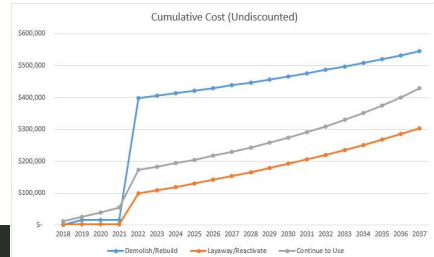
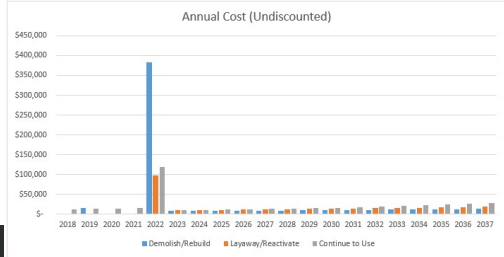
Undiscounted Total Costs			
	Demolish/Rebuild	Layaway/Reactivate	Continue to Use
Layaway Costs	\$ 812.00	\$ 1,577.31	\$ -
Demo/Construction	\$ 397,654.77	\$ 96,925.75	\$ 103,707.04
Energy/Maintenance	\$ 147,393.98	\$ 230,919.58	\$ 394,776.57
Compliance Costs	\$ -	\$ -	\$ -
Historic Costs	\$ -	\$ -	\$ -
Total Costs	\$ 545,860.74	\$ 329,422.64	\$ 498,483.62

Discounted Total Costs			
	Demolish/Rebuild	Layaway/Reactivate	Continue to Use
Layaway Costs	\$ 764.09	\$ 1,484.25	\$ -
Demo/Construction	\$ 295,629.48	\$ 71,513.38	\$ 76,516.72
Energy/Maintenance	\$ 66,261.28	\$ 103,531.01	\$ 204,107.91
Compliance Costs	\$ -	\$ -	\$ -
Historic Costs	\$ -	\$ -	\$ -
Total Costs	\$ 362,654.84	\$ 176,528.64	\$ 280,624.63



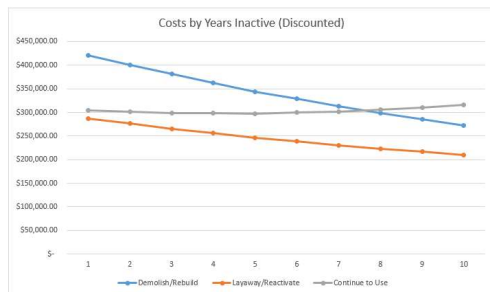
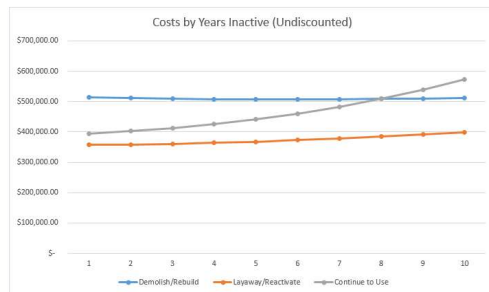
Visualizing Alternatives

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	Totals
Condition Index	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
Layaway for Demolition	\$ 285																				\$ 285
Reactive Tenants	\$ 609																				\$ 609
Demolition																					\$ 15,125
Replacement																					\$ 382,530
Continuation for Demolition	\$ 44																				\$ 44
Energy (Replacement)																					\$ 18,193
Active MBR																					\$ 119,157
Asbestos Removal																					\$ -
UST Closure																					\$ -
Preservation Docs																					\$ -
Preservation Admin																					\$ -
Total	\$ 856	\$ 15,125	\$ -	\$ -	\$ 382,530	\$ 7,432	\$ 7,708	\$ 7,897	\$ 8,299	\$ 8,635	\$ 8,946	\$ 9,293	\$ 9,657	\$ 10,038	\$ 10,438	\$ 10,858	\$ 11,298	\$ 11,761	\$ 12,248	\$ 12,759	\$ 545,861
Total (discount)	\$ 805	\$ 13,959	\$ -	\$ -	\$ 282,257	\$ 5,160	\$ 5,058	\$ 4,938	\$ 4,801	\$ 4,650	\$ 4,583	\$ 4,480	\$ 4,385	\$ 4,285	\$ 4,184	\$ 4,082	\$ 3,979	\$ 3,866	\$ 3,753	\$ 3,640	\$ 362,655
Cumulative	\$ 856	\$ 15,981	\$ 15,981	\$ 15,981	\$ 398,511	\$ 405,943	\$ 413,652	\$ 421,549	\$ 429,848	\$ 438,549	\$ 447,530	\$ 456,803	\$ 466,467	\$ 476,498	\$ 486,896	\$ 497,764	\$ 509,092	\$ 520,884	\$ 533,131	\$ 545,861	\$ 545,861
Cumulative (discount)	\$ 805	\$ 14,758	\$ 14,758	\$ 14,758	\$ 296,465	\$ 301,595	\$ 306,621	\$ 311,548	\$ 316,349	\$ 321,028	\$ 325,621	\$ 330,101	\$ 334,481	\$ 338,766	\$ 342,959	\$ 347,062	\$ 351,081	\$ 355,017	\$ 358,874	\$ 362,655	\$ 362,655



Reactivation Scenarios

Scenario Summary		RP1	RP2	RP3	RP4	RP5	RP6	RP7	RP8	RP9	RP10
Changing Cells:											
Reactivation Period (years):		1	2	3	4	5	6	7	8	9	10
Result Cells:											
Demolish/Rebuild (Undiscounted)	\$ 514,829.96	\$ 512,319.39	\$ 510,333.59	\$ 508,517.77	\$ 506,867.54	\$ 507,250.34	\$ 507,838.59	\$ 508,630.19	\$ 509,623.30	\$ 510,816.30	
Layaway/Reactive (Undiscounted)	\$ 357,021.72	\$ 356,800.89	\$ 361,252.00	\$ 364,147.85	\$ 367,502.66	\$ 372,732.05	\$ 378,548.46	\$ 384,976.30	\$ 392,046.82	\$ 399,793.96	
Continue to Use (Undiscounted)	\$ 395,140.49	\$ 402,965.70	\$ 413,297.11	\$ 425,979.27	\$ 441,136.80	\$ 460,524.32	\$ 483,002.57	\$ 508,884.70	\$ 538,558.32	\$ 572,501.12	
Demolish/Rebuild (Discounted)	\$ 421,410.07	\$ 400,472.59	\$ 380,826.76	\$ 362,096.82	\$ 344,246.51	\$ 328,528.88	\$ 313,485.17	\$ 299,086.94	\$ 285,306.99	\$ 272,115.25	
Layaway/Reactive (Discounted)	\$ 287,163.62	\$ 276,103.07	\$ 265,753.86	\$ 255,869.47	\$ 246,429.99	\$ 238,388.88	\$ 230,700.61	\$ 223,351.72	\$ 216,329.42	\$ 209,621.64	
Continue to Use (Discounted)	\$ 304,372.57	\$ 301,090.39	\$ 298,983.66	\$ 297,805.38	\$ 297,544.92	\$ 299,304.08	\$ 302,014.99	\$ 305,712.93	\$ 310,448.57	\$ 316,290.33	





CERL SMS Study Update

SMS Analyses for other Domains

Mike Grussing



Current SMS coverage

- Buildings
- Pavements
- Railroads
- Fuels Distribution (In Development)
- Utilities (In Development)
 - Water
 - Electrical
 - Sewer
 - Storm Water
 - Gas
 - Thermal



Other Domains

- Structures – Towers, Fences, Pavilions, Monuments, Bridges)
- Grounds – (Ranges, Athletic Fields, Golf Course)
- Water Resources – Wharfs, Piers, Locks, Dams, Flood Control Structures)
- Waste Disposal – Incinerators, Landfills, Recycling Facilities
- Land – (FACs 91xx)



FAC Analysis

FAC	Title	FAC_RPAType	FAC_Desc	FAC_BasicCategory	FAC_CategoryGroup	FAC_Class	FAC_DomainPrimary	FAC_DomainAlternative
7421	Indoor Physical Fitness Facility	B	Fitness facilities may include a gymnasium, athletic courts, work c	Indoor Athletic Facilities	Indoor Morale, Welfare, and Recreation	Housing & Community	Building	
8927	Utility Vaults	S	An enclosed structure, generally made of concrete, that contains u	Miscellaneous Utilities - Each	Miscellaneous Utilities	Utility & Ground Improvements	UTL-GEN	
6200	Administrative Structure, Underground	B	An underground facility containing general office space as well as	Underground Administrative Structures	Underground Administrative Structures	Administrative	Building	
2161	Ammunition Maintenance Shop	B	A facility designed to house ammunition maintenance, repair, and	Ammunition, Explosives, and Toxics Ma	Maintenance Facilities	Maintenance & Production	Building	
7214	Annual Training/Mobilization Barracks	B	A facility that houses unaccompanied personnel during reserve	Unaccompanied Personnel Hou	Unaccompanied Personnel Housing	Housing & Community	Building	
2134	Marine Maintenance Support Facility	B	A facility designed to support ship component maintenance, repa	Ships and Spares Maintenance Facilit	Maintenance Facilities	Maintenance & Production	Building	
7312	Prison/Confinement Facility	B	A facility to house and secure service members during pre-trial	co Safety, Discipline, and Rehabilitation	Personnel Support and Services Facilit	Housing & Community	Building	
1781	Live Hand Grenade Range	S	A range to familiarize with the effects of live hand grenades.	Explosives and Flame Ranges	Training Facilities	Operation & Training	Grounds	
7601	Museum	B	A facility which acquires, conserves, researches, communicates	an Museums and Memorials	Museums And Memorials	Housing & Community	Building	
1491	Nuclear Weapons Support Facility	S	A facility, other than a building, directly related to nuclear weapo	Operational Support Facilities Other Th	Land Operational Facilities	Operation & Training	Structure	
8211	Heat Source	S	A central plant for the production of heat for one or more separat	Heat Source	Heat and Refrigeration (Air Conditionin	Utility & Ground Improvements	UTL-THERM	
2121	Missile Maintenance/Assembly Building	B	A facility in which guided missiles are assembled and/or maintai	Guided Missile Maintenance Facilities	Maintenance Facilities	Maintenance & Production	Building	
3183	Ammunition, Explosive, and Toxic RDT&E Facility	B	Buildings used in the direct research, development, testing, and	o Ammunition, Explosives, and Toxics Res	RDT&E Buildings	Research, Development, Test, and Eval	Building	
1644	Miscellaneous Operations Support Building	B	A building containing equipment and functions that directly supp	Operational Support Buildings	Land Operational Facilities	Operation & Training	Building	Structure
1531	Marine Cargo Staging Area	S	An open area for the temporary placement of cargo to be loaded	o Cargo Handling and Storage Areas	Waterfront Operational Facilities	Operation & Training	Water Res	
8525	Pedestrian Bridge	S	Bridges that support walkway crossing of a river, underpass, or	sid Sidewalks and Other Pavements	Roads and Other Pavements	Utility & Ground Improvements	Structure	
7218	Recruit/Trainee Barracks	B	A facility for housing recruits and/or trainees.	Enlisted Unaccompanied Personnel Hou	Unaccompanied Personnel Housing	Housing & Community	Building	
8313	Water Separation Facility	S	A facility for the separation of grease, oil, or grit from wastewater.	Sewage and Industrial Waste Treatmen	Sewage and Waste	Utility & Ground Improvements	UTL-SEWER	
1311	Communications Building	B	A building that contains communications operations and commun	Communications Buildings	Communications, Navigation Aids and	Operation & Training	Building	Structure
7340	Thrift Shop	B	Thrift shops are nonprofit facilities for the sale and purchase	of u Retail Sales and Service Facilities	Personnel Support and Services Facilit	Housing & Community	Building	
1764	Heavy Antiair Weapon Range	S	A range to teach the techniques of engaging targets with medium	Weapons Ranges	Training Facilities	Operation & Training	Grounds	
8321	Sewer and Industrial Waste Line	LS	A pipeline for the transport of sewage or industrial waste betwe	en Sewage and Industrial Waste Collectio	Sewage and Waste	Utility & Ground Improvements	UTL-SEWER	
7448	Recreational Support Building	B	An enclosed building used to provide support for recreational acti	Miscellaneous Indoor Morale, Welfare	Indoor Morale, Welfare, and Recreation	Housing & Community	Building	
8601	Railroad Track	LS	Rail track to include spurs, sidings, yards, and turnouts.	Track Incl Railroad Tracks	Railroad Facilities	Utility & Ground Improvements	Rail	
2162	Ammunition Maintenance Shop, Depot	B	A facility designed to house ammunition maintenance, repair, and	Ammunition, Explosives, and Toxics Ma	Maintenance Facilities	Maintenance & Production	Building	
8312	Industrial Waste Treatment	S	A facility for the treatment of industrial waste to remove contamin	Sewage and Industrial Waste Treatmen	Sewage and Waste	Utility & Ground Improvements	UTL-SEWER	
8413	Water Storage, Potable	S	A facility for the storage of water that is safe for drinking.	Potable Water Supply, Treatment, and	S Water	Utility & Ground Improvements	UTL-WATER	
7210	Enlisted Unaccompanied Personnel Housing	B	A facility designed to provide permanent housing for unaccompan	Enlisted Unaccompanied Personnel Hou	Unaccompanied Personnel Housing	Housing & Community	Building	
7602	Monument and Memorial	S	Items such as commemorative plaques, military equipment displa	Museums and Memorials	Museums And Memorials	Housing & Community	Structure	
1262	POL Pump Station	S	A facility that consists of POL pumps and related pumping equipm	ent Other Liquid Fuel and Dispensing Facili	Liquid Fueling and Dispensing Facilit	Operation & Training	POL/Fuel	Structure



CERL Hot Seat

Come prepared with questions as we put a panel of BUILDER experts on the hot seat for 30 minutes of Q&A.

Presented by CERL



Catalog Update Approaches

All metrics in BUILDER are based on the catalog of available items. This talk will showcase some short and long-term approaches to improving the costs and service life in BUILDER.

Presented by Matthew Walters, Kurt Sorensen, and Gordian





BUILDER Catalog

DLA Research

Ft. Worth district has updated the catalog for DLA based on data available

NNSA Solution

Linking catalog to RS Means Assembly value for automated annual updates.
Longer discussion during the FM Workshop (9:15 on Friday)

Other Efforts

Tri-Services Cost Bureau

DHA – Contracted for new medical – specific items

ARS – Contractor reviewing work items after every site assessment for items needing updates

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6.3



Tools Update

A quick overview of the CERL and commercially available tools related to BUILDER. This will also include a handout of some new Custom Reports that can be added to any server.

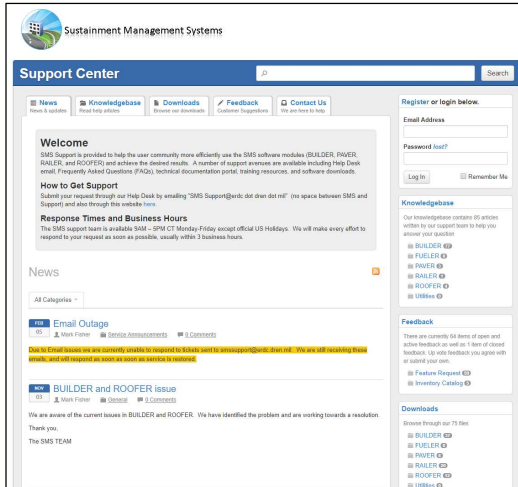
Presented by Matthew Walters & Kurt Sorensen



DIGON
SYSTEMS



CERL SMS Help Desk



- Available to Federal Customers via MIPR to CERL
- Pricing based on user base and level of support requested

6 5



Cost Modifiers

Adders and Multipliers at the Site, Complex, Building, System, Component, Section

Work Configuration Work Item Genomics Reports Tools

Inventory

Building No: 1201 Building Name: Utility Shed

General Info Additional Info Access History Work Item History Systems at a Glance Cost Modifiers Attachments (0)

Select the Cost Modifiers you wish to Activate. Inherited modifiers from parent Buildings, Systems, and Components are also listed, along with other system modifiers.

Activate	Inherit	Modifier Name	Modifier	Impact	Comments	
<input type="checkbox"/>	<input type="checkbox"/>	Asbestos Present	1.50x	\$18,000.00		Save
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lead Paint Removal	2.00x	\$24,000.00	all hallway paint	Save
<input type="checkbox"/>	<input type="checkbox"/>	Lead Testing	+300	\$900.00		Save
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Green Fund Reimbursement - A/C SEER Tier 2	0.75x	-\$1,200.00		Save
<input type="checkbox"/>	<input type="checkbox"/>	Green Fund Reimbursement - LED Lighting	-75	\$75.00		Save



CERL Tools

EquipMapper

Modifies BRED files with linked spreadsheets for inventory and inspection data.

Data Link

Requires a direct database connection to edit fields allowing users to modify the catalog.

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6.7



CERL Tools

Data Link

Requires a direct database connection to edit fields allowing users to modify the catalog.

	Replace	Repair	Remove	Paint
Unit Cost				
Cost Year 2016	2016	2016	2016	2016
Cost Repair Factor 1.5				



Available Custom Reports

QA Review

This report is a comprehensive Section-level report that contains Asset-level data, Section Inventory data, Inspection data from the latest inspection, relevant Section-level metrics calculated by BUILDER, current year work items, and space to put reviewer comments and action items.

Audit

This report provides a list of the day, time, and description of specific actions that have been performed in BUILDER. This can provide valuable visibility into a user action history between a specific date range.

Scenario Summary

This report shows work summary requirements related to a Scenario, including the costs, Condition Index, Functionality Index, Performance Index, and Facility Condition Index projected for each year by Building over the life of the selected Scenario. There is also a tab that lists every Work Item as well as tabs for each Building that show the projected Condition Index trend line for every Section.

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New Custom Report - Catalog

This report provides a list of all Sections and their Sub-Components, Unit of Measure, Design Life, and Unit Cost, as well as any Cost Multipliers and the number of times used. One version has all variables and another is formatted for printing.

Catalog ID	System	Component	Material Category	Component Type	UoM	Design Life	Adjusted Unit Cost (Without Area Factor)	Number Of Times In Use
41000	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	General	LF	100	\$93	0
42000	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Other	LF	100	\$93	0
43000	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Unknown	LF	100	\$93	0
30212	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Foundation Wall	GF	100	\$11	4
21351	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Grade Beams	LF	100	\$209	0
21350	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101001 WALL FOUNDATIONS	Cirp Footing	LF	150	\$93	0
41001	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	General	EA	50	\$3,361	0
42001	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Other	EA	50	\$3,361	0
43001	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Unknown	EA	50	\$3,361	0
30001	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier	EA	75	\$3,361	0
30002	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier - Concrete	EA	75	\$28,914	0
30003	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier - Steel	EA	70	\$37,589	0
30004	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Column Pier - Wood	EA	50	\$5,819	0
21348	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Pile Cap	EA	100	\$3,361	0
21347	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101002 COLUMN FOUNDATIONS & PILE CAPS	Spread Footing	EA	150	\$543	0
41002	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101003 DEWATERING	General	GF	20	\$1	0
42002	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101003 DEWATERING	Other	GF	20	\$1	0
43002	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101003 DEWATERING	Unknown	GF	20	\$1	0
41003	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101090 OTHER STANDARD FOUNDATIONS	General	EA	20	\$543	0
41004	A10 FOUNDATIONS	A1010 STANDARD FOUNDATIONS	A101090 OTHER STANDARD FOUNDATIONS	Other	EA	20	\$543	0

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7.0



SPIRE

Simplifies and Augments the BUILDER API for system and batch integration



Reference Materials

An Assessment Manual has been published offering a deep level of consistency. The document will be reviewed with highlights on content.



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Standardization

- **ACSIM (AMRY) Funded Implementation Guide**
 - **NOT a Guide Strictly for AE Contracts**
- **CERL Contracted/HDR Executed**
- Intent was to Incorporate ALL Lessons Learned
 - **Critique/Review by Committee**
 - Great Baseline Document but...
 - Some May Disagree about Minutiae
 - Look at Overall Intent to Standardize
 - NOT Intended to Supersede SOW



Sustainment Management System

Army BUILDER™ SMS Inventory and Assessment Guide

A10 FOUNDATIONS
 A20 BASEMENT CONSTRUCTION
 B10 SUPERSTRUCTURE
 B20 EXTERIOR ENCLOSURE
 B30 ROOFING
 C10 INTERIOR CONSTRUCTION
 C20 STAIRS
 C30 INTERIOR FINISHES
 D10 CONVEYANCE
 D20 PLUMBING
 D30 HVAC
 D40 FIRE PROTECTION
 D50 ELECTRICAL
 E10 EQUIPMENT



Army BUILDER™ SMS Inventory and Assessment Guide

A10 FOUNDATIONS

7.5



BUILDER™ Safety and Site Preparation Guidance

A10

Safety

Safety is of the utmost concern and should always be on the forefront of any activities that are taking place in the field. There are many potential safety hazards associated with building assessment site visits. Prior to performing building assessments, the assessment staff/team must ensure that field activities are in accordance with the 1) Safety plan, 2) OSHA, and 3) Installation safety guidelines. The following recommendations do not supersede any OSHA, agency, base safety requirements or contractor safety plan.

Safety Preparation Activities

Do not perform a task that you are not comfortable with or that may endanger your own safety and health or that of others.

Visit with the installation safety representative to review installation-specific safety requirements.

Conduct a daily "stand-up" safety meeting.

Ensure new assessors have been properly trained.

Go over the assessment plan/schedule for the day.

Ensure proper Personal Protective Equipment (PPE) is available. This includes but is not limited to hardhat, hearing protection, eye protection, safety shoes, gloves, and a safety colored vest.

Prior to each day's assessments, the team leader needs to check with the safety office or building POC to determine if there are any building/site-specific safety rules or hazards. For instance, some manufacturing areas may require steel toe shoes, hearing, or eye protection.

Safety Recommendations

Do not walk and write or talk on a mobile phone at the same time; this can lead to trips/falls.

Do not review documents or write while walking on steps or stairs.

Do not enter posted or suspected confined spaces such as crawl spaces, tanks, chases, or pits.

Mechanical rooms, attic spaces, or other areas with piping/ductwork may require the use of hard hats to prevent against head bumping hazards. Refer to the project specific safety plan for further clarification.

Do not enter areas with hazard material signs posted or that appear to contain hazardous materials (asbestos, gases, visible mold, etc.).

Be careful when walking through/across vehicle maintenance or staging areas.

Be aware of loose-fitting clothing and lanyards that may get caught in tight areas or on piping such as in mechanical/electrical rooms, etc.

Be careful of wildlife and insects when walking around a building or opening seldom-entered mechanical/electrical



Site Preparation

Site Preparation Activities

- Coordinate with the base to determine if escorts are required, if camera passes are required, or if there are any access issues (classified/secure areas or the need for keys from other individuals).
- Locate buildings on a map and develop a schedule. Coordinate with the base to identify the appropriate building manager from the POC list. Notify the building managers of the upcoming assessment as needed.
- Obtain a set of mechanical/electrical room master keys from the installation POC.
- Extract all BRED™ files from BUILDER™ and have them loaded onto tablets (if using tablets). Verify all tablets are charged.
- If multiple buildings are going to be assessed by 1 team, confirm with the team leader the schedule and the plan of action for the day. A schedule may have building start times detailed to the hour.
- Review the building names for the types/sizes of buildings that you will be assessing to determine/confirm what tools or safety equipment are needed. For instance, if the weather is cold and you are visiting a large number of warehouses (that are most likely unheated), you may want to consider additional cold weather gear.

Recommended Assessor Gear/Tools

Hardhat	Digital Camera with Extra Battery(s)
Hearing Protection	Measuring Tape
Safety Glasses	Laser Measuring Device/Flash Light
Reflective Safety Vest	Measuring Wheel
OSHA Approved Footwear	Backpack
Other Required Personal Protection Equipment (PPE)	Graphite Powder (for stuck locks)
Cell Phone and Team Cell Phone List	Cleaning Pad (to clean/help read nameplates)
Assessment Schedule	Pen/Pencils
Building Floor Plans/Base Map	Clipboard
Small Magnet (for determining door/window type)	Paper/Assessment Forms
Flash Light/Compass	Graph Paper
Sun Screen/Bug Spray	Refillable Water Bottle

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BUILDER™ Execution Guidance

A10

Operating in the field in an efficient manner is key to the success of the assessment. The following guidance is broken down by 1) Team Leader and 2) Assessor roles. **Bold items are drivers for client deliverables.**

Team Leader

Upon arrival at the building, check in with the building manager and QA representative (if present). Conduct the building manager interview. The entire team should be present for the building manager interview. The following questions should be asked:

- Question 1: Are there any mission-related deficiencies in the building?
- Question 2: Are there any safety-related deficiencies in the building?
- Question 3: Have there been any upgrades or remodels of the building?
- Question 4: Are there any building deficiencies (HVAC not working, electrical breakers tripping, maintenance issues, roof leaks, etc.) present?

The team leader (ONLY the team leader!) should populate the building level comment with the following information: 1) Missing systems, 2) Renovation dates, 3) Areas of the building not accessible during the assessment, and 4) If drawings were/were not provided. Below are some example building level comments:

- Comment 1: No A20, D10, or D40 systems present. 2016: Vault room not accessible. Drawings not provided.
- Comment 2: No A20 systems present. Renovated in 2010. 2016: 5% of building not accessible. Drawings provided.

The team leader should review the real property data in BRED™ and compare it to what is found during the assessment. The following should be confirmed: 1) Number of stories, 2) Building square footage, and 3) Building install date and 4) Building number in BRED™ matches what is on the building. Variances between real property data and actual field data should be recorded for inclusion into the client deliverable.

Team Leader and Assessors

Each assessor should first take a photo of the building number to identify the subsequent photos associated with the building when they are downloaded. Take a second picture that captures the overall building view with respect to nearby buildings/streets. This should help refresh/remind you on what the building looks like, while performing data-entry.

Team caucus to discuss the sectioning strategy for the building and confirm which side is facing north.

Each assessor should have a consistent approach from building to building. Assessors should move around the building exterior and interior in a clockwise (or counterclockwise) manner making notes and taking photos.

If a safety item is found, notify the team lead. The team lead will notify the building manager. Capture a photo of the safety item for inclusion into the safety log. Follow all other project-specific procedures when a safety item is encountered.

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7.8



General Guidance

A10

A10 FOUNDATIONS

General

A1010 - Standard Foundations: Includes spread and strip footings that support the building structure.

A1020 - Special Foundations: Includes piers, piles, and buttresses that support the building structure. These are typically found on larger buildings or where soil conditions are not favorable, such as coastal areas.

A1030 - Slab on Grade: The slab on grade (SOG) may also assist in supporting the building structure when designed for foundation support, often with a 'turn down' footing. This condition is typically found in smaller structures. The SOG may also serve as the interior finished floor surface when not covered, such as in a warehouse, or provide substrate for floor finishes (ceramic tile, wood, carpet).

This section presents common Uniformat A10 Foundations Inventory Component Sections found across installations as a guide for entering into the BUILDER™ or BUILDER™ Remote Entry Database (BRED™) software. Inventory items are arranged by BUILDER™ System with Material/Equipment Category, Component Type, Unit of Measure, and Inventory Notes.

Inspection

Foundation component sections are assessed using Direct Condition Rating (DCR) or Age-Based Modeling. Most of the time the foundations are not visible. When foundations component sections are not visible, no assessment is entered. In this case, BUILDER™ will use the inventory year installed and degradation curves built in to the software to establish the Condition Index (CI).

Foundations show slow rates of deterioration.

Rule of thumb: If you can see it, you should inspect it. There are some caveats to this rule. See component catalog for items that must be age-based whether visible or non-visible.

The assessor may observe conditions in the visible foundation major components such as cracking, displacement, or other damage. These conditions may also be visible in interior or exterior walls, and the floor. If observed, the assessor must consider the severity and density of these conditions to determine if the DCR rating should be adjusted.

When foundation component sections are visible, they should be assessed.

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How to Perform a Direct Condition Rating (DCR) Assessment

A10

The most critical part to an assessment is having all assessors aligned on how to perform an assessment. To reach an accurate DCR of a component follow the steps below:

Step 1: Consider the level of degradation and the performance of the component:

OPERATIONAL CAPABILITY	OPERATIONAL CONDITION RATING	DEGRADATION	DCR
Fully Operational	Green	Free of observable or known degradation.	Green (+)
		Normal wear requiring normal preventative maintenance.	Green
		Normal degradation requiring corrective maintenance.	Green (-)
Impaired Operation	Amber	Minor degradation requiring corrective maintenance.	Amber (+)
		Moderate degradation requiring corrective repair.	Amber
		Significant degradation requiring moderate repair.	Amber (-)
Inoperable	Red	Extensive degradation requiring major repair.	Red (+)
		Severe degradation requiring major rehabilitation or partial replacement.	Red
		Complete degradation requiring full replacement.	Red (-)

Step 2: Consider the maintenance requirements of the component:

Type	Green (G+/G/G-)	Amber (A+/A/A-)	Red (R+/R/R-)
Dynamic (Equipment)	Distresses present are of no impact to the components operation. Example: The fan component is fully operational.	Distresses present are of impact to the components operation. A repair is needed to bring the component back to proper operating condition. Example: A fan has corrosion on the housing. A sand and paint would remove the distress.	Distresses present are of impact to the components operation. The component needs to be replaced. Example: A fan motor has overheated and no longer functions. Replacement of the component is required.
Non-Dynamic	The architecture component is in good condition requiring no	The architecture component has a distress that requires an extra level of maintenance outside of normal	The architecture component has a distress where a maintenance operation will not

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How to Perform a Direct Condition Rating (DCR) Assessment

A10

Step 3: Adhere to the following requirements:

Requirements

Maintainability and obsolescence should not be the driving factor when conducting a condition assessment unless it has led to actual deterioration of condition that can be observed or reasonably inferred.

G+ ratings should only be given to inventory that is in pristine condition and is free of any observable defects.

Do not downgrade an assessment rating simply because an item is dirty.

Do not downgrade an assessment rating due to age or belief that the item is outdated.

Do not downgrade an assessment rating because the item does not meet current code compliance standards.

Do not downgrade an assessment rating because the item is not deemed energy efficient.

Do not downgrade an assessment rating because the item is deemed to be a safety violation/hazard unless otherwise directed.

Do not downgrade an assessment rating because of a code violation.

Ratings should not be anticipated based on planned repairs or replacement.

Assessors should not expend field time and effort to determine the cause of a deficiency. If the cause is easily identified it should be included in the inspection comment.

Ratings shall be based upon the observable and documentable condition of the component at the time of the assessment.

A component should be downgraded if its operational capability, performance, reliability, etc. is compromised according to the direct rating definitions.

Incorporate user interviews, work order histories, or other information sources when determining the condition of the component. Include this information in the inspection comment.

Step 4: Using the 3 steps above, arrive at the DCR inspection of the component.

The assessor has now calibrated their mindset on what the expected DCR should be based on condition. The assessor has considered the maintenance requirements of the component in the current condition. The assessor has factored in the requirements/business rules for completing an inspection.

The assessor should use these 3 factors to arrive at the condition of the component:

One factor that can play into an assessment is if the assessor receives information from a POC that results in a lower rating. For instance, an assessment takes place in July and there is a heating water pump that looks brand new, but has a blown motor. The assessor would assume the pump is supposed to be off due to being off season, but if the POC informs the assessor about the blown motor, this can be factored into the

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A103001 STANDARD SLAB ON GRADE

Component Type	In Scope?	Details Req?	Inventory Pic?	Inventory Cmmt?	Age Based?	Design Life	UOM
General	No	No	No	No	No	75	SF
Other	No	No	No	No	No	75	SF
Unknown	No	No	No	No	No	75	SF

A103002 STRUCTURAL SLAB ON GRADE

Component Type	In Scope?	Details Req?	Inventory Pic?	Inventory Cmmt?	Age Based?	Design Life	UOM
General	Yes	No	No	No	No	75	SF
Other	Yes	No	Yes	Yes	No	75	SF
Unknown	No	No	No	No	No	75	SF

A103003 TRENCHES

Component Type	In Scope?	Details Req?	Inventory Pic?	Inventory Cmmt?	Age Based?	Design Life	UOM
General	No	No	No	No	No	20	LF
Other	No	No	No	No	No	20	LF
Unknown	No	No	No	No	No	20	LF

A103004 PITS AND BASES

Component Type	In Scope?	Details Req?	Inventory Pic?	Inventory Cmmt?	Age Based?	Design Life	UOM
General	No	No	No	No	No	20	EA
Other	No	No	No	No	No	20	EA
Unknown	No	No	No	No	No	20	EA

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Standardization

- **US Army Inventory & Assessment Guide**
 - “US Army”
 - “Guide”
- NOT Intended to Supersede Contract SOW
- Truly a “Living Document”
- Focus ONLY on Inventory & Assessment
 - Presume Later Versions to Come...

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8 3



Enterprise SMS Update

CERL will showcase the progress on Utilities SMS and speak to the progress on the full implementation of BUILDER on the new platform.

Presented by Matthew Walters



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Development Philosophy

- Common software architecture to accommodate all current SMS domains (buildings, rail, pavements, utilities, fuels)
- Abstract design to allow for rapid expansion to account for new domains
- All work completed on shared platform usable by every ESMS Domain

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Software Architecture

- Layered Architecture separates database, business processes, communication pieces between those, and the application presentation from one another
- Limits fragility between changes in layers
- Increased flexibility for future changes (ex. New presentation layer; smartphone app)

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Machine Interfaces

- Web-based Application Programming Interface (API) for populating data from other systems
- Real Property databases
- GIS databases
- Computerized Maintenance Management Systems (CMMS)
- Building Information Models (BIM)
- Cost Estimation Sources
- Data Visualization tools
- Third party data collection tools

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Why does ESMS matter?

- Single, flexible, modern platform for SMS
- Current applications showing age both aesthetically and technologically
- Provides a new framework for advanced data analytics, prediction, and optimization

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Fuels Assets

Primary Funding Sponsor: Defense Logistics Agency (DLA)

FY18 Development Contract Underway

- Database Schema Update and Performance Improvements
- User Interface Maturation
- Work Item Workflow Processing
- ESMS Tablet GIS Selector
- Distress Surveys in Desktop/Tablet
- Inspection Schedules (Rudimentary Initial Capability)

Utilities Assets

Primary Funding Sponsor: Air Force Civil Engineer Center

FY18 Development Contracts Underway

- Work Analysis Engine – Metric based Work Item generation for Enterprise SMS
- Work Planning User Interface – GUI for user creation of Work Plans and user selection of configured settings for Work Plan execution
- Power BI integration into the ESMS Web platform
- [Microsoft PowerBI Example](#)



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ESMS: Three Waves of Progress...

Deficiency Analysis Wave I

- ESMS Core Framework
- Tablet Platform
- Desktop Platform
- Web Platform
- Planning Study Support
- Direct Rating (CI)
- Functional Assessment (FI)
- Business Intelligence Dashboard
- Document Management
- Map Displays

Component Analysis Wave II

- Deficiency Analysis plus the following additional capabilities:
- Inspection Schedules
- RMMR Data
- Component Lifecycle Data
- Component Cost Factors
- Distress Surveys
- Long-term Work Plans
- API Gateway
- FCI

Systems Analysis Wave III

- Component Analysis plus the following additional capabilities:
- Defect Surveys with work actions
- Work Plan Optimization
- Portfolio Business Intelligence

2019

2023

2025

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Enterprise SMS Upcoming Milestones

- Initial Long Range Work Planning in ESMS Fall 2018
- PowerBI integration into ESMS Fall 2018
- Refactored Tablet Form Factor
- Web-Based Configuration Manager
- DLA Pilot Project Planning Studies at Fort Hood, Fairchild AFB, and NAS Pensacola in Summer 2018
- Six-week training session for 60+ DLA Users
- FY18 DLA funding documents in process for mobile app development

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Thank You

Please send feedback and future discussions to:
info@digonsystems.com

SEE YOU NEXT YEAR!



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