accruent

Accruent LLC | Lake County, IL

Date Submitted	04/18/2017
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Submitted by **Accruent LLC**

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VFA

April 18, 2017

Jeremiah Varco
Facilities Manager
Lake County, IL
18 N. County Street
Waukegan, IL 60085
Email: jvarco@lakecountyil.gov

Subject: Proposal for Facility Condition Assessment Services

Dear Jeremiah,

Accruent is pleased to present the following proposal to Lake County, IL for Facility Condition Assessment Services. Enclosed please find our response that highlights our offerings and recommendations directly relevant to your requirements. Realizing that ease of procurement is a priority when purchasing software, we have liaised with the National Cooperative Purchasing Alliance (NCPA) with regards to this proposal and have registered our quote with the NCPA to insure accurate pricing per the terms and conditions of our contract with the NCPA. Through this purchasing cooperative, Lake County will receive a 13% discount off list price. The Registered Quotation Number for this proposal is as follows: **2017-8712343705.**

Whether Lake County requires a baseline of portfolio-wide facility conditions, a targeted evaluation of business-critical systems, or specialized expertise to supplement that of your own staff, Accruent has a solution to meet your needs. Included is a blended fee proposal for Comprehensive and Systems Lifecycle assessment services. We help you determine the most cost-effective assessment approach, and ensure a consistent and objective assessment process across multiple facilities. The table which follows compares the two services described herein. With our depth of knowledge of state and local government clients, similar to Lake County, we are recommending a hybrid combination of our Comprehensive and Systems Lifecycle services in order to best meet your short and long-term organizational and capital planning goals. The fees are broken down into a lump sum for Comprehensive and Lifecycle services respectively, with a table that shows the solution that correlates with each county-owned facility.

Facilities Assessment Services Comparison

	Systems Lifestyle	Comprehensive
Assessment Approach		
Onsite (Visual) Inspection	X	X
Fully aligned to actual installed systems	X	X
Portfolio Use	• Lifecycle planning and budgeting • Appropriate to add newer buildings (less	• Capital planning, budgeting and project execution

	than 5 years old) into the planning and budgeting process	• Appropriate for most complex buildings, special requirements, high priority buildings
Capital Needs Generated		
Capital Renewals	X	X
Deferred Maintenance/Deficiencies		X
Code/Regulatory/Compliance		X
Information Provided		
FCI	X	X
Capital Projections	X	
Capital Plans		X
Reports		
Deferred Maintenance		X
Lifecycle	X	X
Full Report Package		X

Our Assessment Services Team will conduct facility condition assessments to define requirements, determine at risk facilities, and determine future funding forecasts. Used in conjunction, VFA.facility will serve as a single source of truth for your capital investment data. The data collected by our Assessment Team will enhance your VFA.facility database and enable Lake County to answer some very important questions, such as:

- What do we own (facilities and systems)?

- What is their condition?

- How much money do we need in the coming years to maintain our facilities in adequate condition?

- What will the future condition of our facilities be at the current funding levels?

- What are the most important projects to accomplish given current funding?

Lake County will benefit significantly from the intellectual capital the Accruent Assessment Services Team has gained over years of working with hundreds of organizations to solve their evolving capital planning challenges throughout our seventeen years in this business.

- The Accruent Assessment Services Team has provided more facility condition assessment services than any other firm in the world with over 180,000 facilities comprising more than 4.5 billion square feet world-wide.

- The Accruent Assessment Services Team has the largest dedicated staff, with over 100 Facility Assessors trained on our methodology and software with, on average, of over 20 years of experience. This allows us greater resourcing flexibility to meet most customers' schedules as required.

Accruent's assessment clients have been recognized for delivering programs that impact the bottom line by aligning facilities capital plans with organizational objectives to reduce risk, lower costs, improve service quality and customer satisfaction. Accruent has successfully helped numerous clients in the U.S., Canada and the UK, including the Illinois Capital Development Board, the University of Illinois System, Northwestern, and Milwaukee County make the most of their ever-shrinking capital budgets. This is why over 95% of our clients continue the relationship over many years.

Our team thanks you for this opportunity to submit a proposal for Facility Condition Assessment and we are very excited at the prospect of continuing a long-term partnership with you, and your team. You have our commitment to deliver the highest quality assessment services to provide a more complete capital planning solution in conjuncture with VFA.facility. Should you have any questions about our Statement of Qualifications, please feel free to call me directly.

Sincerely,

Christopher Nabers
Account Executive
Capital Planning
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FEE SCHEDULE

Assessment Performed as One Continuous Project

PRODUCT/SERVICE	DESCRIPTION	FEE
Assessment Services		
Facility Condition Assessment	Comprehensive Facility Condition Assessment (FCA) totaling 861,912 square feet per Exhibit 1 Building List.	$90,290
	Lifecycle Facility Condition Assessment (LCA) totaling 394,715 square feet per Exhibit 1 Building List.	$29,389

Notes

1. Fees is valid for a period of 180 days from the date of the Budgetary Quote.

2. Budgetary Quote includes reasonable and customary expenses.

3. FCA and LCA Quote assumes that the in-scope portfolio will be assessed as one continuous project. Accruent reserves the right to request a change order should the scope and square footage change.

4. Assessment Services are subject to Accruent's Region 14 ESC Agreement, administered by NCPA.

Exhibit 1 Building List

Building Name	Sq Foot	Building Use	FCA	LCA
Administrative Tower "A"	110,432	Lake County, Gov. Services	X	
Administration Building "B"	26,145	Lake County, Gov. Services	X	
19th Judicial Courts Complex	163,724	19th Judicial Courts	X	
19th Judicial Juvenile Detention Center	65,128	19th Judicial Courts	X	
Babcox Justice Center	248,728	Sheriff	X	
Babcox Work Release - Community Base Correctional Center	42,600	Sheriff	X	
Radio/ETSB/Communications	8,329	Sheriff	X	
Highway Patrol	7,912	Sheriff	X	
Training Facility	1,500	Sheriff	X	
Belvidere Medical Building	43,216	Health Department	X	
Belvidere Annex	5,448	Health Department	X	
Women's Residential Services	16,256	Health Department	X	
3002 Grand Ave	25,106	Health Department	X	
3004 Grand Ave	5,587	Health Department	X	
3010 Grand Ave	85,026	Health Department	X	
3008 Grand Ave	6,775	Health Department	X	
19th Judicial Public Defender's	20,674	19th Judicial Courts		X
19th Judicial Adult Probation	32,500	19th Judicial Courts		X
19th Judicial Park City Branch Courthouse	14,175	19th Judicial Courts		X
19th Judicial Mundelein Branch Courthouse	7,852	19th Judicial Courts		X
19th Judicial Round Lake Beach Branch Courthouse	7,890	19th Judicial Courts		X
Coroner's Office	10,135	Sheriff		X
Sheriff Evidence Storage Building "H"	4,862	Sheriff		X
Central Permit Facility	64,152	Lake County, Gov. Services		X
Animal Control w/Kennel	9,100	Health Department		X
T.B. Clinic	2,456	Health Department		X
Group Home	4,650	Health Department		X
Zion Clinic/ NE Satellite	4,918	Health Department		X
Midlakes Clinic	13,264	Health Department		X
North Chicago Clinic	10,000	Health Department		X
North Shore Health Center	10,000	Health Department		X
DOT Administration Building (Traffic Management Center)	21,190	Division of Transportation		X
DOT Building "A", Light-Duty Vehicle Maintenance Shop	13,712	Division of Transportation		X
DOT Building "B", Heavy-Duty Maintenance & Fabrication Shop	9,025	Division of Transportation		X
DOT Building "B-1" Welding Shop	9,000	Division of Transportation		X
DOT Building "C", Body Shop, Grader Barn, Truck Wash Bay	20,200	Division of Transportation		X
DOT Building "D", Truck Storage Building	20,132	Division of Transportation		X
DOT Building "E", Sign Shop	9,307	Division of Transportation		X
DOT Building "H", Facilities Maintenance Shop	1,000	Division of Transportation		X
DOT Building "I", Storage Building	6,100	Division of Transportation		X
DOT Building "J", Equipment & Materials Storage	3,870	Division of Transportation		X
DOT Building "K", Storage Building	169	Division of Transportation		X
DOT Building "L", Fuel Island Building	285	Division of Transportation		X

DOT Building "L", Salt Storage Dome Facility #1	12,400	Division of Transportation		**X**
DOT Building "N", Salt Storage Dome Facility #2	12,300	Division of Transportation		**X**
DOT Building "O", Winter Liquid Blending Building	480	Division of Transportation		**X**
DOT Satellite Garage	1,402	Division of Transportation		**X**
PW Administration Building	8,684	Public Works		**X**
PW Cold Storage	3,224	Public Works		**X**
PW Maintenance Garage	20,615	Public Works		**X**
PW Storage Bin	4,992	Public Works		**X**

ASSESSMENT SERVICES

Comprehensive Facility Condition Assessment Management and Technical Approach

Accruent has no "design-build" or other construction management aspirations. Consequently, assessment data garnered by VFA is independently objective and untainted by the "stakeholder mindset."

Accruent provides consistent, reliable data and transparent, easy-to-follow program management advice that will enable you to effectively and efficiently manage your facility capital program. Figure 1 shows Accruent's process for conducting facility assessments and providing deliverables that enable customers to more effectively manage their asset portfolios.
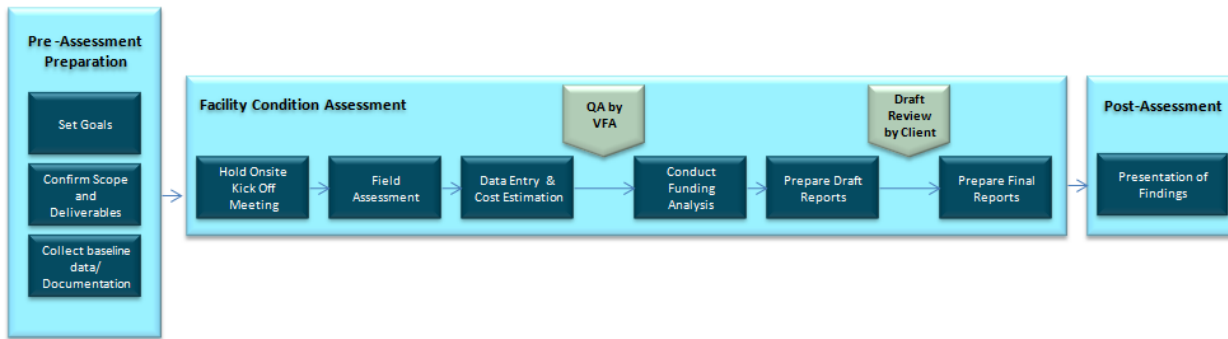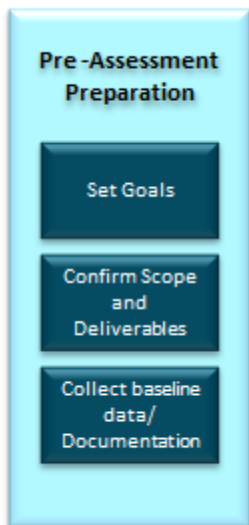

Figure 1 Accruent's assessment process has been refined and proven through the assessment of more than 4 billion square feet of assets under management.

Details about each phase of this process are provided in the following sections.

Pre-Assessment Preparation Phase

Set Goals - To kick off the project, Accruent will set up a meeting (either via teleconference or in person) with your key stakeholders to confirm the goals and objectives for the project. Understanding what you want to achieve with this project is the key to its success and will drive the project effort. This will ensure that the end deliverable is exactly what you are expecting and will best meet your goals.

Confirm Scope and Deliverables - During this planning phase, Accruent will work with your key stakeholders to establish and document the parameters for the assessment / survey. A scoping meeting (also via teleconference or in person) will be held to discuss and confirm schedules, assessment/survey criteria, data classifications, prioritizations and categorizations, and the best method for storing asset data to support your analysis, reporting, and planning needs. Often the goal setting and confirmation of scope and deliverables can be discussed and agreed in one meeting.

Collect Baseline Data / Documentation - The Accruent team will communicate with your facility managers, plant maintenance managers, and staff members (via email or teleconference) to help them gather information that the Accruent assessment and survey teams will need. This data typically includes asset location, number, use and name, dates of initial construction and any renovations, number of floors, gross area, and any other relevant data. Data that will be uploaded into VFA.facility must be provided to Accruent in spreadsheet or database format. Additionally, any information regarding site maps, principal asset activities, occupancy schedules, any outstanding asset code violations, recent studies such as ADA or roofing inspections, that are provided to Accruent, and that will impact how Accruent conducts our assessment work, will also be reviewed.

As a result from the discussions of the scope parameters, Accruent will configure our software tools to align with the level of assessments / surveys agreed to in the workshop. Data points like prioritization schemes, systems to be assessed and level of detail required will be setup and configured.

The Assessment phase is the on-site work performed by Accruent's assessment team and subsequent data entry/analysis done at Accruent's offices. By the end of this stage, the assessment data will be collected and populated in VFA.facility; this includes analysis of the data, such as cost estimates for corrective actions.

Hold Onsite Kick Off Meeting On the morning of the first day of the field visit, Accruent will organize a meeting with the staff that will be involved with the field assessment phases of the project to kick off the on-site survey work. This meeting will enable your staff to meet the Accruent assessment team and understand the project schedule. It will also include discussion of the logistics of the site visit, such as gaining access to all elements of the facility, and other practical information important to undertaking the physical assessment. Accruent will ensure that all functional teams understand project objectives, conditions, and goals.

As part of the meeting the following information is typically discussed as part of our assessment needs:

- Basic Building Information
- Systems to be assessed
- Special data that needs to be tracked
- Previous assessments performed and success rates working with the results
- Current process for Capital Planning
- Assessment Logistics

Field Assessment Accruent's team will visually inspect all of the assets included in the scope of the project to identify deficient conditions and assess the remaining lifecycle of designated asset systems. The teams will document requirements, including digital photographs of asset exteriors and any observed conditions within the assets. The survey will include a visual inspection of the building and all of the building's architectural, mechanical, and electrical systems listed in Table 1.

Table 1 Accruent assesses architectural, mechanical, and electrical systems as classified by the Uniformat standards.

Substructure	Fittings	Fuel Pumps & Storage Tanks	Plumbing Fixtures
Superstructure	Stairs	Fire Suppression	Domestic Water Distribution
Exterior Walls	Wall Finishes	Electrical Service & Distribution	HVAC Systems
Exterior Windows	Floor Finishes	Lighting & Branch Wiring	Heat Generating Systems
Exterior Doors	Ceiling Finishes	Communications & Security	Cooling Generating Systems
Roofing	Conveying	Fire Service Water	Distribution Systems
Partitions	Steam	Electrical	Terminal & Package Units
Interior Doors	Chilled Water	Chillers	Controls & Distribution
Interior Walls	Compressed Air System	Boilers	Vertical Transportation
Interior Flooring	Telecommunications & Paging		

The inspection of the asset interiors will include all mechanical and electrical rooms, as well as a representative sampling of rooms. Resultant requirements will be identified for the entire asset or system (not by individual

room or component). The inspections of the asset exteriors will include an approximate ten-foot perimeter around the asset and the areas adjacent to and/or attached to the asset that are inherent to the asset's use, such as ramps, stairs, paving, landscaping, and exterior, wall-mounted lighting.

Accruent does not include intrusive and destructive testing such as infrared, roofing core sampling, soil testing, generator testing, and hazardous material testing as part of the standard assessment methodology. If observed field conditions warrant further testing, Accruent will make recommendations for such investigation as appropriate.
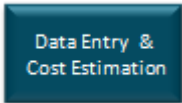
Data Entry & Cost Estimation After the on-site work is complete, the survey team will review their notes and findings and begin entering all of the collected data into VFA.facility. This will include descriptive narratives, field entries, and photos as described in the following list:

- **Asset Descriptions:** A narrative summary of each assessed facility will be documented in the asset description. Additional details of each of the asset's systems will be recorded in system descriptions. This information is useful for having documentation regarding the basic information about an asset, such as construction information.

- **System Models and Conditions:** Assets (buildings) are broken down into their component systems in the database. These system models provide an up-to-date record of what exists within the building at the time of the assessment (i.e., what type of roof?), and how much of it is present (i.e., how much acoustical ceiling tile vs. gypsum wallboard ceilings). System models record the expected useful lifespan of each system (i.e., how long should this roof last?) and how much useful life remains based on the visual inspection (i.e., how long can we expect the roof will last?). A replace-in-kind replacement value is established for each system as well as a projected renewal cost (i.e., how much should we expect to pay when the system is at the end of its life?). Based on the information gathered in the inspection, you will have an understanding of the reinvestment rate required on an annual basis to replace system components that have reached or exceeded the end of their useful lives.

- **Requirements:** Requirements are issues such as systems or components that are unsafe, broken/damaged, can no longer perform the intended function, are approaching or have exceeded their useful life spans, do not conform to current codes, or may be an improvement to the facility, such as an energy conservation project. The survey will typically include capital needs rather than operational, such as major repair to air handling unit vs. changing a fan belt. (Capital vs. operational expenses is often set by a dollar minimum threshold, such as $5,000 and will be agreed upon at the beginning of project.) Each requirement is individually classified by priority, category (cause of issue), system, and inspector, thereby allowing for multiple queries and flexible data analysis. If required, additional classifications for specific needs can also be created by the project manager or your site administrator.

  o Each Requirement must be assigned a Priority that indicates its severity and the ideal time frame for correction. The Accruent standard Priorities are described in detail below.

  The chart below lists the current default Priorities along with their definitions and default years offset. These Priorities, their Descriptions and years offset may be modified based on client preference. Depending on the selected Priority's number of years offset, the Observed Years Remaining should be adjusted accordingly when following the Requirement Renewal Method. Standard definitions of priorities are provided in Table 2. Accruent will work with you to determine the specific priorities to be used for this project.

Table 2 Priorities associate requirements with a timeframe; standard priorities shown here can be tailored to meet client requirements.

Priority	Definition	Years Offset

Priority 1	Due within 1 Year of Inspection	1
Priority 2	Due within 2 Years of Inspection	2
Priority 3	Due within 5 Years of Inspection	5
Priority 4	Not Time Based	null

- o Each Requirement must be assigned a category that indicates the general issue or the reason for the deficiency. The standard Requirement Categories, listed below, include a broad range of topical causes for adding the Requirement to the Asset, but may be customized by the client if necessary.

  While the software allows a user to assign a parent or child category to a Requirement, the Accruent standard is to use the child categories only. All types of Requirements can be categorized within the child categories, and doing so allows for a more precise classification of the issue. Standard categories are shown in *Table 3*.

Table 3 Categories group requirements by cause or reason.

Category	Sub-category
Integrity	• Lifecycle • Reliability
Regulatory	• Life Safety • Building Code • HazMat • Accessibility
Optimization	• Technological Improvements • Capacity • Mission • Maintenance • Abandoned • Energy • Sustainability

- o *Corrective Actions:* Accruent's assessors will recommend a corrective action for each requirement. The actions are based upon the materials and equipment required to repair or replace the identified deficiency along with necessary labor. Accruent will work with your organization to identify any soft costs (e.g., permitting fees, project management fees, etc.) that should also be included.

- o *Digital Photos:* Accruent will import digital photos taken during the assessment to visually illustrate existing conditions. A selection of photographs of the asset exterior and the critical requirements within each asset will be stored and linked to requirements where a supporting photo is beneficial.

Accruent ensures a quality project through a comprehensive Quality Assurance program. Data is reviewed by team members, project managers, and the designated QA manager for the project before submission to you for review.

Conduct
Funding
Analysis

Data in Accruent Facility will be used to determine the long-term system renewal costs and timing, develop multiple funding options, and perform a comparative analysis of these funding options; these analyses will be discussed with you. The Accruent Team will equip your organization with information to make sound decisions about long-term capital reinvestment in your existing buildings. Accruent understands that facility conditions are not the only factor in determining what renovations, replacements, or repairs to undertake, and are in many cases considered in support of other drivers such as impact on mission, risk, space planning needs, or changes in use.

After the facilities assessment data has been entered into the database and action methodologies and costs have been established, benchmarking the condition of the facilities can begin. Accruent has automated a standard process to assess the relative condition of assets, facilitating comparison both within and among organizations and locations. A Facility Condition Index (FCI) will be calculated for each asset (building) evaluated, providing a key benchmark indicator to quantify the condition of the property (see Figure 2). It is calculated as the deferred maintenance and renewal needs (typically over a 5 year period) divided by the current replacement value of the building. The lower the FCI value, the better the condition of the building.

Your organization will be able to ascertain the impact of various funding levels on the FCI of the assets, or alternatively, the funding requirements to achieve a specific asset FCI.

Facility Condition Index (FCI)
An industry standard parametric tool used to compare relative building conditions.

$$FCI = \frac{\text{total cost of existing deficiencies}}{\text{current replacement value}}$$
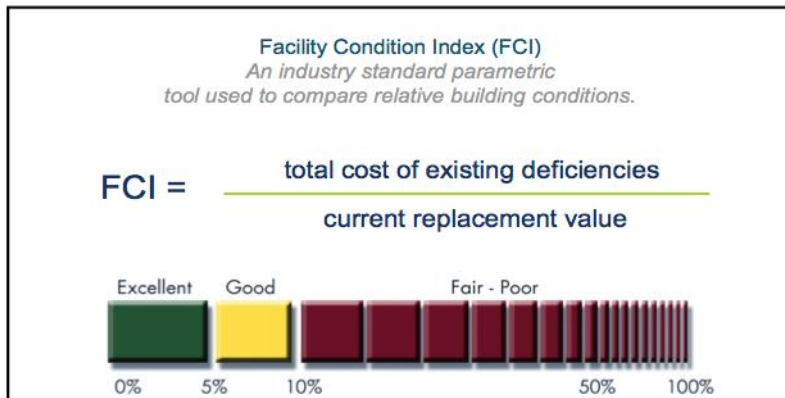
Figure 2 FCI is an extremely useful metric for assessing asset condition.

Based on the criteria selected (i.e., assets, building systems, requirement priorities and categories, number of years forecasted, etc.), VFA.facility will calculate the long-term renewals for the assets and systems included in the project utilizing the previously developed system model and systems conditions evaluation. In addition, Accruent will also explore and analyze alternative funding strategies for restoring and maintaining a targeted level of asset condition. By varying levels of funding, timing and project content, the impact on facilities/infrastructure condition over time can be understood. These alternative strategies will be reviewed and discussed with your organization.

Using these analytical capabilities, competing funding requirements can be analyzed based on criteria and logic that Accruent will establish with you to ensure consistent, equitable, goal-oriented, needs-based, and efficient capital planning. The resulting funding analysis can then be used by you to establish funding levels to support the development of your capital plan.

Prepare Draft
Reports

During this phase, Accruent's capital planning and management software will be used by Accruent's assessors to determine the long-term system renewal costs and timing, multiple funding options will

be developed, and a comparative analysis of these funding options will be discussed with you. A preliminary draft report will be submitted to you after the data has been evaluated and entered into VFA.facility. This preliminary report will give you an opportunity to review content, including a review of data classifications (such as priorities, categories, and systems), general consistency of overall estimates, and report formats.

The draft report will contain:

- Narrative Summary: A complete description of the facility and a summary of deficiencies listed within each section of the detailed report. (Asset lists and summaries – by age, use, FCI)

- Digital Facility Photographs.

- Facility Work Type Summary: A summary breakdown of type of work and total costs for each facility. (Deferred maintenance summaries – presented by priority, system and category and cross tabular format)

- Facility System Summary: A summary breakdown of the total costs for a facility by assessed system. (System renewal forecasts and SCI reports)

- Major Deficiency Photographs: By inspection types using digital cameras

- Inspection Details: This report is divided by inspection type for each facility (Asset snapshots – asset descriptions, systems information, requirement lists)

Draft Review by Client

In addition, Accruent will establish a read-only user account during the course of the project which will allow your personnel to monitor progress, review data, and make comments on facility assessment data once it has been submitted for review.

Prepare Final Reports
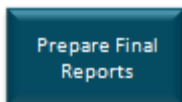
Following your review of the Draft Building Evaluation Report format, the Accruent Project Manager will make any adjustments to the format of the report and will prepare The Final Building Evaluation Report for the remainder of the assets. The Final Building Evaluation Report will document the findings and present analyses of the FCA, and will include the following sections:

- Executive Summary

- Assessment Methodology

- Funding Scenarios

- Capital Renewal Requirements

- Client Summary Data Reports (Requirement Summaries and Cross-tabular Reports)

- Detailed Requirement Reports (Including Asset Summary, Requirement Descriptions)

Post-Assessment Phase

Once the assessment and analysis is complete, Accruent will present their findings and assist you to become self-sufficient in maintaining the data and reporting from the software.

Post-Assessment

Presentation of Findings
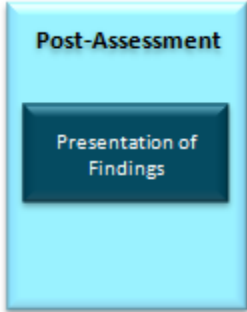
Presentation of Findings - The final key step in the assessment process is the Presentation of Findings. This is a formal meeting, presented by the Accruent Project Manager or Project Director via WebEx or at your site to present the final results of the assessment. The data will be presented logically and methodically.

Systems Lifecycle Condition Assessment

Accruent's Lifecycle Condition Assessment (LCA) is designed to provide building owners with a quick and cost effective estimate of the major system capital renewal events for assets in their portfolio. The LCA includes profiling all the major component systems in a building (or other asset, such as utility infrastructure), e.g.: What type of roof? How old? How many years remaining until renewal are due? How much will it cost to renew it? The LCA does NOT provide a list or cost estimates of individual deficient conditions within an asset. That service is available in a Detailed Facility Condition Assessment.

Gather Base Building Information

The first step in the Lifecycle Condition Assessment process is to gather base building information. Based on Lake County's existing information, Accruent will enter base data on each building into the Accruent software. Lake County shall provide Accruent with general information including building number, name, and dates of construction, number of floors, gross area and building use.

Accruent also requests hardcopy 8.5" x 11" photocopied reduced floor plans of the buildings with mechanical and electrical rooms/closets and roof access points clearly identified and highlighted on the drawings. This information must be made available to Accruent prior to the on-site walk-though tour.

LCA Methodology

The LCA methodology is a process where the systems within a building are evaluated for their age, condition and cost. The systems are evaluated individually and the aggregated results enable a data-driven understanding of building condition, system replacement timing and capital expenditure needs over a given period of time. A twenty (20) year outlook will be used for Lake County.

The process begins with an on-site kick-off meeting at each campus with Accruent's project team and members of the Lake County team at the institution being assessed. The participants collaborate to enable the Accruent team to learn about specific system issues within each of the buildings to be assessed. The Lake County team has the opportunity to ask additional questions from the team.

Following the kick-off meeting the team conducts a walk-through of each building to evaluate the systems. The Architect evaluates the exterior systems, interior finishes and overall structure. The Electrical Engineer evaluates the main electrical service and distribution, branch circuitry, lighting, emergency power, fire alarm and communications systems. The Mechanical Engineer evaluates the heating, ventilating and air conditioning (HVAC), plumbing and fire protections systems.

For each system, specific information is gathered including date installed, type, capacity, effective age and overall operational condition. The systems are categorized according to the NIST Uniformat II standards. The team records the information while in the field so that it can be referenced in the next phase of the methodology; data entry and cost analysis.

During data entry and cost analysis, the team reviews the information gathered in the field and compiles and formats the data into a building system model. This information is recorded in the Accruent software, VFA.facility. A separate record is created for each building system. The system records consist of a generic description of the system, the date installed, actual or estimated age, expected lifetime, years remaining in lifetime, system quantity or capacity, system replacement cost and system renewal cost. The system costs are generated from Accruent's comprehensive system templates which use integrated RSMeans cost estimating assemblies and line items. The baseline RSMean's costs are adjusted for each campus location by assigning one of the RSMeans City Cost Indexes to account for localized material and labor rates. System lifetimes are based on the most current BOMA lifecycle standards.

Once completed, the system records, in aggregate, comprise a system model for each building. The system model in the software enables a data-driven understanding of building condition, system replacement timing and capital expenditure needs over a given period of time. In addition, the system replacement costs are summed to

calculate an asset replacement value for the building. The replacement value becomes an important input to the building's Facility Condition Index (FCI), a key benchmark indicator which quantifies the condition of the building.

The FCI is calculated by dividing the sum of the System Renewal Requirements (described below) by the Asset Replacement Value. The resulting fraction represents the portion of the building's replacement value that needs to be replaced or renewed within the next year and is an indicator of condition. The lower the FCI is, the better the overall condition of the building.

$$\text{FCI} = \frac{\sum \text{System Renewal Requirement Costs}}{\text{Asset Replacement Value}}$$

System Renewal Requirements

A System Renewal Requirement is a requirement record that is automatically generated by VFA.facility to represent the cost and action date of an asset system's renewal event. The Renewal Requirements are automatically generated when a system's renewal fiscal year falls within the Planning Window. Typically, the Planning Window is 3-5 years. For example, in FY 2017, a VFA.facility website with a Planning Window set at 5 years will have Renewal Requirements for systems that have renewal fiscal years in the past, in the current fiscal year (2017), and for 5 future fiscal years.

Lifecycle and Cost Estimate Validation

As with any estimating process it is necessary to conduct diligent evaluation of the input and output of the estimated values. For the Lake County project, both lifecycle (expected useful lifespan of each component system) estimates and cost estimates will be verified and validated based on industry standards and historical information provided by Lake County.

The lifecycle information published by the Building Owners and Managers Association (BOMA) is a widely accepted standard for system lifecycles. Since the information is industry average for all buildings, an effort will be made to determine if any adjustments need to be made based on the application of the public sector vertical standards. Accruent will initiate discussions with Lake County to determine if the BOMA standards will be acceptable. If it is determined that the standard is not sufficient for use, adjustment will be made.

The RSMeans system replacement cost estimates will be evaluated for accuracy compared to available historical cost information provided by Lake County. If it is determined that the raw cost data contained within the system records is low, the costs will be adjusted. Accruent has found that the adjustments are typically a result of two reasons:

- **Design & Contingency Adjustment:** The RSMeans data used in the VFA.facility system templates accounts for materials and labor (raw construction costs) to replace a given system as well as overhead and profit related to the primary contractor (the subcontractor level, e.g. the HVAC contractor for HVAC work). Engineering, design and inspection fees are not included in the costs. Additionally, no contingency costs are carried. Should Lake County require that these be included, Accruent will adjust the raw construction costs by an agreed upon percentage for each.

- **Client Market-Specific Premium:** In Accruent's experience, a premium cost multiplier sometimes needs to be utilized to reflect the additional cost of a contractor conducting operations in a public sector environment. Baseline RSMeans data represents an average of labor and material costs in a given locale. As with all averages, the actual data used to calculate the average will fluctuate higher and lower. It has been Accruent's experience that work in a public sector environment tends to reflect higher costs rather

than lower. The reasons for this premium may include such factors as: compressed work schedules; work in occupied spaces; public safety and security obligations; parking and layout restrictions; system quality; system redundancy; and diligent conformance to codes and standards in the public sector environment. These costs can vary by location and system somewhat, but in an effort to promote consistency and continuity a single adjustment factor will be used for all systems. The results of actual historical costs provided to Accruent compared to the estimated costs will be reviewed with Lake County prior to any adjustments being made.

System Renewal Costs

The LCA provides an estimated system replacement cost, a building replacement cost (as the sum of individual system replacement costs), and a system renewal cost. The adjustments discussed to this point have focused on system replacement and building replacement values. System renewal costs differ from system replacement costs, and have additional adjustment factors, for two reasons:

When a system reaches the end of its lifecycle it may be replaced in its entirety, such as a roofing system, or it could be renewed by replacing or repairing components, while leaving a portion of the original system intact, like the building's foundation. A base percent renewed factor is applied to account for some percentage of each system that will be renewed or replaced when the system wears out. This adjustment has the effect of reducing the renewal cost of some systems below their "system replacement value" because they will not be replaced in their entirety.

A demolition and disposal adjustment of 25% is applied to every system to project renewal costs. Demolition and disposal are costs not included in the replacement value (they are not necessary when building a system from scratch, as in new construction), but are necessary when replacing or renewing a system in an existing building.

The table below illustrates how a percent renewed adjustment is made when projecting the estimated renewal costs.

Table 1. Sample Percent Renewed Adjustments

System	Sample Base Replacement Cost	Base "% Renewed"	Demo & Disposal Adjustment	"% Renewed" in VFA.facility	Resultant Renewal Cost
A - Substructure/Foundations	$2,460	5%	+25%	6.25%	$155
B30 - Roofing	$38,160	100%	+25%	125%	$47,700
D3040 - Electrical Distribution	$475,690	75%	+25%	93.75%	$445,960
D5030 - Communications & Security	$112,420	85%	+25%	106.25%	$119,445

In sum, Accruent's Lifecycle Condition Assessments of the Lake County's assets will provide a consistent means of comparing the system component renewal needs of buildings assessed at each location. Survey elements, data collection methods and cost estimating adjustments will all be tuned to meet the specific needs of Lake County's current condition assessment project.

Sample Condition Data Reports

This section presents condition data reports from a typical Lifecycle Condition Assessment project.

- **Asset List, of Buildings Assessed, FCI Values**
  Provides list of assets assessed by campus. Includes Asset Number, Asset Size, Asset Replacement Value, Cost/SF, FCI % and FCI Cost ($) for each asset and summed for each campus.

- **Asset Detail Report, for Each Building Assessed**
  Detailed report for each asset showing base asset data (address, use, SF), a brief building description, a list of component systems (alpha by Uniformat Code), system types, system descriptions, and system replacement values.

- **Renewal Needs by Asset and by Year Crosstab Report**
  Provides quick view of renewal costs needed for each asset in each year over the next 20 years.

- **System Renewal Report, by Year, for Each Building Assessed**
  System renewal events for each asset are shown sorted and summed by Renewal Year. Includes system name, replacement value, %-renewed, renewal value, and renewal year.

- **Requirements List**
  The Requirement List report displays a concise list of an Asset's Requirements. These requirements were automatically generated as System Renewal Requirements.

Asset List, of Buildings Assessed, FCI Values

VFA

Strategic Service Unit: Springfield
Campus: Springfield Main Campus
Asset Type: Building

Number	Name	Use	Age	Size	Replacement Value	Cost/Unit	FCI Cost	FCI	RI Cost	RI
3510	Fremont Clinic	Medical - Clinic	25	156,684 SF	14,754	0.11	316	0.02	316	0.02
3510	Hospital Building A Patient Tower	Medical - Hospital	2	175,000 SF	27,810	0.16	606	0.02	606	0.02
3510	Hospital Building C & D	Medical - Hospital	22	274,570 SF	37,027	0.13	1,588	0.04	1,588	0.04
3510	Hospital Building F	Medical - Hospital	25	236,282 SF	30,359	0.13	729	0.02	729	0.02
3510	Hospital Building G	Medical - Hospital	27	266,322 SF	37,759	0.14	2,235	0.06	2,835	0.08
3510	Hospital Building H	Medical - Hospital	41	150,397 SF	18,025	0.12	1,378	0.08	1,436	0.08
3510	Hospital Building J Patient Tower	Medical - Hospital	59	85,742 SF	11,082	0.13	262	0.02	302	0.03
3510	Hospital Building K Patient Tower	Medical - Hospital	59	86,315 SF	10,952	0.13	487	0.04	527	0.05
3510	Marion Center	Medical - Clinic	35	54,000 SF	4,980	0.09	388	0.08	388	0.08
3510	Physical Therapy(90)/Sports Medicine ('06)	Medical - Clinic	19	65,069 SF	8,546	0.13	134	0.02	134	0.02
3510	Utility Building	Maintenance	31	6,628 SF	646	0.10	81	0.12	81	0.12
3510	Whiteside Clinic	Medical - Clinic	19	121,382 SF	14,159	0.12	1,268	0.09	1,568	0.11
			Total :	1,658,391	216,099	NA	9,471	0.04	10,509	0.05

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Asset Detail Report, for Each Building Assessed

VFA

Asset Detail Report

by Asset Name

Strategic Service Unit:	Springfield	Asset Name:	Hospital Building H
Campus:	Springfield Main Campus	Asset Number:	3510

STATISTICS

FCI Cost:	1,378,090	FCI:	0.08
Total Requirements Cost :	1,436,368	RI:	0.08

Current Replacement Value	18,024,716	Address 1	1235 East Cherokee St
Size	150,397 SF	Address 2	-
Year Constructed	1968	City	Springfield
Year Renovated	-	State/Province/Region	Missouri
Commission Date	-	Zip/Postal Code	65804
Decommission Date	-	Architect	-
Ownership	Mercy Owned	Historical Category	None
Floors	7	Construction Type	-
Type	Building	Use	Medical - Hospital

PHOTO

H Bldg East Pavilion (2)

-

Asset Description

HVAC

The buildings HVAC systems are comprised of numerous components. A chilled water and steam constant volume air handling unit located in mechanical room 702 provides conditioned air to most of the building and steam cast iron type fan coil units located at perimeter office windows. The air handling unit is comprised of multi-sections with supply fans serving different areas of the building. A return fan located within the air handling unit serves the entire building. Renovations in 1983 replaced an estimated 15% of the ducted steam fan coil units with four pipe chilled water fan coil units and hot water fin tube radiation. Steam cast iron radiators are installed in some perimeter offices and stairwells. A split type direct expansion air conditioning unit located on the roof and mechanical room 702 serves the seventh floor office area. A chilled water air handling unit located in the basement generator room serves adjacent mechanical rooms and storage areas. A new chilled water air handling unit located in office service area 045B serves the basement copy center. Fan coil units located in ceilings and in walls serve common spaces such as the atrium and merchandising areas.

Chilled water serving the air handling and fan coil units is provided via the campus wide loop via building E-53. Chilled water supply and return mains enter the building in mechanical room 090 adjacent to water meter.

Steam serving the buildings two steam to heating hot water converters, central air handling unit and perimeter ducted cast iron fan coil units is provided by the campus wide cogen plant. Steam enters the building and is reduced from high pressure to medium pressure then to low pressure via a steam PRV station located in mechanical room 090.

Heating hot water is provided by two steam to heating hot water converter located in mechanical room 061. A duplex heating hot water circulating pump set is located in the same room.

Building exhaust serving bathrooms, mechanical rooms, kitchens and general spaces is provided by a combination of V-belt drive fans and rooftop mounted mushroom type exhaust fans.

Building controls are primarily pneumatic with control air compressors located in mechanical rooms 061. Some terminal devices have electrically operated control valves and local thermostats.

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System List Report, by Renewal Year, for Each Building Assessed (below).

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System List Report

by Asset Name

Strategic Service Unit:	Springfield		Asset Name :	Hospital Building H	
Campus:	Springfield Main Campus		Asset Number :	3510	
			Asset Size :	150,397 SF	
			Asset Replacement Value :	18,024,716	

System	System Name	Lifetime	SCI	Renewal FY	Renewal Cost	Replacement Cost
A-Substructure	Pile Foundations	75	0.00	2044	13,934	222,937
A-Substructure	Structural Slab on Grade - Non Industrial	75	0.00	2044	6,258	100,121
A-Substructure	Foundation Wall and Footings 16-Ft - Full Basement	75	0.00	2044	43,103	689,641
B10-Superstructure	Multi-Floor Superstructure - High Cost	75	0.00	2044	210,274	3,364,381
B2010-Exterior Walls	Brick Walls	75	0.00	2035	74,635	597,080
B2020-Exterior Windows	Aluminum Windows	30	0.00	2028	1,244,256	995,405
B2030-Exterior Doors	Door Assembly 4 - Moderate Size and Cost	30	0.00	2019	31,043	24,834
B2030-Exterior Doors	Door Assembly-Storefront-Electric Sliding	20	0.00	2016	38,792	31,034
B2030-Exterior Doors	Door Assembly - 3 x 7 HM	30	0.00	2019	9,768	7,814
B30-Roofing	Modified Bitumen SROF-50001	20	0.00	2019	5,829	4,664
B30-Roofing	Modified Bitumen SROF-50003	20	1.25	2011	98,279	78,624
B30-Roofing	Modified Bitumen SROF-50005	20	1.25	2011	3,608	2,887

Renewal Needs by Asset and by Year Crosstab Report

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System Crosstab Report
by Asset and Year

Strategic Service Unit:
Springfield

Campus:
Springfield Main Campus, Berryville

Asset=>Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Hospital Building K Patient Tower	302	110	0	0	0	2	0	1,230	894	154	0	133	1,885	0	1,951	1,861	0	876	39	9,240	470	18,956
Hospital Building G	99	84	590	154	183	162	0	1,848	0	2,742	392	4,151	221	295	25,889	1,530	116	3,224	42	20,801	666	63,210
Energy Center	0	0	0	0	0	0	0	195	0	102	0	25	0	0	645	0	29,341	309	0	129	0	30,647
Hammond Heart Institute	0	0	0	0	0	2,245	158	1,468	205	101	77	127	0	0	30	589	909	796	355	5,356	0	12,416
Parking Garage Hospital	0	0	0	0	0	0	0	0	0	0	0	63	0	0	0	0	0	0	0	4,594	0	4,695
Daycare	0	0	0	0	0	14	17	33	0	18	0	46	0	93	6	0	1,330	29	0	820	28	2,434
Berryville Hospital	0	0	0	0	210	476	0	615	0	426	296	256	416	587	2,275	115	0	48	0	1,975	0	7,706
Hospital Building B Patient Tower	0	0	0	0	0	0	0	463	0	2,138	504	248	0	0	0	0	0	733	0	13,623	0	17,369
Hospital Building C & D	155	0	0	0	595	0	0	3,911	0	8,338	957	4,325	0	794	18,594	0	0	6,122	0	17,530	389	61,710
Hospital Building E Emergency Department	0	0	0	0	134	0	1,459	0	0	0	19	621	224	0	0	0	11,617	94	0	78	1	14,254
Hospital Building F	147	327	0	0	1,105	276	3,916	2,106	0	5,244	123	4,231	0	7,805	3,047	437	383	3,058	0	4,980	369	37,866
Marion Center	0	365	0	0	0	88	142	487	0	143	0	287	0	578	40	0	1,784	184	0	5,088	178	9,363
Utility Building	0	0	29	0	0	0	0	11	0	0	0	0	27	81	636	13	0	0	0	0	0	797
Parking Garage at Emergency Department	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,343	0	0	0	1,343
Ambulatory Surgery Center	0	0	0	0	0	0	71	0	0	1,413	256	4,406	0	0	1,150	441	8,957	0	0	3,076	899	20,669
Cancer Center	0	0	0	0	0	0	83	0	0	242	45	335	45	198	2,103	419	703	44	697	3,734	0	8,602
Fremont Clinic	0	0	0	0	0	598	5	388	97	2,027	0	1,778	33	23	184	2,664	361	1,342	0	12,004	23	21,345
Hospital Building A Patient Tower	0	0	0	0	0	0	0	237	0	2,337	478	0	0	0	0	0	0	0	0	12,366	757	14,176

All costs in 000s USD. Renewal costs include a 3% inflation rate

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System Renewal Report, by Year, for Each Building Assessed

    a.   System name and lifetime

    b.   System quantity (where applicable) and replacement cost.

    c.   Renewal fiscal year

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System Renewal Report

By Asset

Strategic Service Unit: Springfield
Campus: Springfield Main Campus

Asset Name : Hospital Building H
Asset Number : 3510
Asset Size : 150,397 SF
Asset Replacement Cost : 18,024,716

System	System Name	Lifetime (Years)	Years Remaining	Unit Cost	Quantity	Replacement Cost	Percent Renew	Renewal FY	Renewal Cost
B2020-Exterior Windows	Aluminum Windows	30	20 (Observed)	20.75	47,968	995,405	125.00%	2028	2,977,808
B2030-Exterior Doors	Door Assembly 4 - Moderate Size and Cost	30	10 (Observed)	4,139.01	6	24,834	125.00%	2019	49,139
B2030-Exterior Doors	Door Assembly-Storefront-Electric Sliding	20	8 (Observed)	10,344.57	3	31,034	125.00%	2016	53,502
B2030-Exterior Doors	Door Assembly - 3 x 7 HM	30	10 (Observed)	1,953.50	4	7,814	125.00%	2019	15,461
B30-Roofing	Modified Bitumen SROF-50001	20	11 (Observed)	5.21	895	4,664	125.00%	2019	9,228
B30-Roofing	Modified Bitumen SROF-50003	20	3 (Observed)	5.21	15,089	78,624	125.00%	2011	107,735
B30-Roofing	Modified Bitumen SROF-50005	20	3 (Observed)	5.21	554	2,887	125.00%	2011	3,956
B30-Roofing	Thermoplastic polyolefin (TPO) SROF-50002	20	2 (Observed)	5.21	3,832	19,967	125.00%	2010	26,132
B30-Roofing	EPDM SROF-50167	20	2 (Observed)	4.78	964	4,609	125.00%	2010	6,031
C1010-Partitions	GWB 2HR Rated Walls	50	20 (Observed)	4.37	21,485	93,891	62.50%	2028	140,440
C1010-Partitions	Plaster Walls - Thin Coat	50	20 (Observed)	0.38	150,397	56,549	62.50%	2028	84,585
C1010-Partitions	GWB Walls - Standard (Non-Painted)	50	20 (Observed)	0.60	150,397	89,637	62.50%	2028	134,076

All costs in USD. Renewal Costs include 4.70 % inflation rate