# APPENDIX N – EVALUATION OF FUTURE DISPOSITION OF EXISTING TERMINAL

## Forward

The report was prepared by KLJ for the Old Minot Airport Facility (OMAF) for the purpose of determining the facility condition index status of OMAF facility. As the new Minot Airport Facility is being constructed, the data collected will be used to help determine what direction the Airport Authority and City should pursue regarding the facility. The data contained within are estimates as of November 2015; the overall conditions of OMAF facility are ever-changing due to many factors including newly occurring deficiencies, recent building renovations, repairs, and construction market conditions in general. The following data are for use only by OMAF to assess and prioritize facility planning and capital construction needs, review and prioritize facilities for improvements, and make recommendations to the Board of Trustees regarding appropriate allocation of financial outlays for capital renewal and deferred maintenance issues.

## Introduction

As Graham Construction Company is completing work on the New Minot Airport, KLJ was assigned the task of conducting a facility condition assessment and creating a database to assist the Airport Authority in its program planning for the existing Minot Airport Facility.

The report outlines the assessment data gathered by KLJ during the period of September 2015—October 2015 and includes both on-site physical inspections and evaluations and interviews of facility administrators, maintenance personnel and city officials.

The assessments required the use of distinctive methods and approaches to the work. KLJ personnel conducted the physical condition assessment of the building and grounds and prepared the overall findings in this report.

The report includes the assessment results of the designated OMAF facility only, encompassing approximately 32,200 total gross square feet. Site, temporary or portable buildings were not assessed.

The findings in this report are based on KLJ facility condition assessment approaches, methods and techniques, and best standards used to evaluate and assess the physical condition of and support facilities.

# Executive Summary

## *Purpose of the OMAF Assessment*

In September 2015, OMAF assigned KLJ to conduct a system-level condition assessment of the Old Minot Airport Facility. OMAF initiated the facility condition assessment by KLJ to:

- Perform assessment services to develop current facility condition data that can be used by OMAF facility staff to determine best reuse or repurposing of the facility, or to remove the facility for future other use.
- Identify facility deficiency correction cost budgets that can be prioritized and categorized to maximize repair and replacement efficiencies.
- Establish Facility Condition Index (FCI) and other industry standard benchmarks as prioritization tools to quantify the facilities current condition and future funding requirements.

## *Assessment Objectives*

The objectives of this assessment were to determine and report on the general status of the building's current and deferred maintenance conditions based on its components' useful life and to provide recommended funding budgets for OMAF's capital renewal expenditures over the Current Period of 2015-2020 (5 years). The assessment process and the resultant database were initiated to enhance OMAF's facility planning and decision making. The assessment work to achieve the following objectives:

Collate relevant existing building data, reports or other facility information at OMAF facilities and their supporting infrastructure.

Developed a facilities condition assessment database

## *Assessment Benefits*

The OMAF facility condition assessment process provides the following benefits to OMAF facility administrators:

- Increased credibility—OMAF building operators and administrators must obtain their funds from at least one, sometimes several levels of corporate governance. KLJ assessment and process are based on experienced construction professionals using cost data from RSMeans combined with the best practices of owner associations such as BOMA. The data reports conditions and facility renewal capital reinvestment requirements. The assessment documents improvements through the reduction of deferred maintenance and the application of proactive capital renewal.
- Procurement savings—Facility system renewal data provides OMAF with statistically derived future funding requirements to proactively plan projects. By grouping deficient conditions into a single contract, OMAF receive economies of scale from the construction markets and reduced internal soft costs.
- Ranked funding needs—the database reports the relative condition of buildings using a ratio of needed repairs (Needs) over current replacement value (CRV) to develop the facility condition index (FCI). This ratio index provides a ranking of facilities into a potential list of "worst first." The Extended FCI evaluates facility condition index at any point in the future to reflect the future value of renewal and repair funding. These and other database ranking tools provide an objective determination of future funding needed across OMAF's facilities.

# Findings Summary

This report contains the results of the Facility Condition Assessment for the Old Minot Airport Facility. The report is a planning tool to assist the OMAF Board in making decisions needed to achieve their short and long term facility goals. It contains data and tables meant to objectively describe the findings and summarize the results of this study using assessment best practices and standards.

## *Current and Forecast Needs*

The facility was assessed for physical condition, repair, maintenance and capital renewal needs. Through these efforts, the facility received an FCA report detailing the deferred maintenance and capital renewal needs of the selected building system.

The following table summarizes Facility estimate for Current Period condition deferred maintenance needs documented in the 2015 assessment:

*Table N-1 – Summary of Current Facility Condition Index*

| Facility Name | Gross Area SF | Current Replacement Value | Current Needs - 2015[1] | 2015 FCI |
|---|---|---|---|---|
| Old Minot Airport Facility | 32,200 | $7,245,000.00 | $1,367,492 | 18.87% |

*Source: KLJ Analysis*

| |
|---|
| Poor > 30% |
| Fair > 15% < 30% |
| Good < 15% |

The 2015 current needs are combined with the forecasted capital renewal needs through 2020 to create the Current Period Needs. This calculation assumes the 2015 assessment, 2016 planning, and a 2016-2020 program. The results are as follows:

*Table N-2 – Summary of Current and Short Term Facility Condition Index*

| Facility Name | Gross Area SF | Current Replacement Value | 2015 FCI[2] | Current Period Needs[3] 2016-2020 | Total Needs 2015-2020 |
|---|---|---|---|---|---|
| Old Minot Airport Facility | 32,200 | $7,245,000.00 | 18.87% | $476,273 | $1,843,765 |

*Source: KLJ Analysis*

[1] Current Needs represent the results of the 2015 assessment and do not include any future capital renewal needs –see Current Period.

[2] FCI is an industry-standard measurement of a facility's condition that is the ratio of the cost to correct a facility's deficiencies to the Current Replacement Value (CRV) of the facilities. CRV represents the hypothetical total cost of rebuilding or replacing an existing facility in current dollars to its optimal condition under current codes and construction methods. FCI is typically expressed as a percent

[3] The Current Period is the present year plus five forward years—in this report 2016-2020. This period is derived by anticipating a 2015 implementation program and a resulting 5 year program through 2020, added to the current year 2015.

## *Current Deficiencies*

The general or ordinary maintenance of the facilities is "fair". However, deferred maintenance in the form of unfunded capital repairs and wear and tear represent 2015 budgeted deficiency[4] needs of about $1,367,492:

| Systems | Current Deficiencies 2015 | Current Period Needs (2016-2020) | Total Needs |
|---|---|---|---|
| Total - Cost +Soft Costs | $1,367,492 | $476,273 | $1,843,765 |
| Substructure | $7,000 | $8,000 | $15,000 |
| Foundation | $5,000 | | $5,000 |
| SOG | $2,000 | $8,000 | $10,000 |
| Shell | $233,065 | $27,500 | $260,565 |
| Superstructure | | | |
| Steel Beams | $5,000 | $5,000 | $10,000 |
| Metal Decking | $2,500 | $2,500 | $5,000 |
| Exterior Enclosure | | | |
| Masonry | $2,090 | | $2,090 |
| Doors & Hardware | $10,000 | $5,000 | $15,000 |
| Sectional Doors | $30,000 | | $30,000 |
| Window & Glazing | $12,500 | $10,000 | $22,500 |
| Sealants | $5,000 | $5,000 | $10,000 |
| Roofing | | | |
| Demo Roof | $11,850 | | $11,850 |
| TPO System | $46,383 | | $46,383 |
| Insulation- 2 1/2" | $65,747 | | $65,747 |
| Hardboard | $21,758 | | $21,758 |
| Filter Fabric | $4,730 | | $4,730 |
| Cap Flashing | $10,000 | | $10,000 |
| Ballast | $5,507 | | $5,507 |
| Interiors | $775,799 | $287,649 | $1,063,448 |
| Handrail- Code Compliant | $16,000 | | $16,000 |
| Gypsum Board | $11,900 | | $11,900 |
| Painting | $35,000 | $20,236 | $55,236 |
| Acoustical Panels- 10% | $7,599 | | $7,599 |
| Flooring- Carpet | $18,750 | | $18,750 |
| Flooring- Tile | $40,000 | $10,313 | $50,313 |
| Bathrooms | $42,750 | | $42,750 |
| Elevators | $10,000 | | $10,000 |
| Plumbing | $39,125 | $20,000 | $59,125 |
| HVAC | $257,600 | $177,100 | $434,700 |
| Fire Protection | $209,300 | | $209,300 |
| Electrical | | | |
| Phone System Upgrades | $5,000 | $5,000 | $10,000 |
| Panel Upgrades | | $5,000 | $5,000 |
| Code & Energy Upgrades | $82,775 | | $82,775 |
| Security | | $50,000 | $50,000 |
| Equipment & Furnishings | $60,000 | $60,000 | $120,000 |
| Equipment | $15,000 | $15,000 | $30,000 |
| Furnishings | $45,000 | $45,000 | $90,000 |
| Special Construction | $45,031 | $7,239 | $52,270 |
| Separation Wall | $8,500 | | $8,500 |
| General Cleanup | $8,000 | $2,500 | $10,500 |
| Demolition | $28,531 | $4,739 | $33,270 |

[4] A deficiency is the state of being damaged, missing, inadequate or insufficient for an intended purpose.

## *Prioritization of Needs*

As a result of conducting the facility condition assessment the Total Needs were recorded by their priority, or urgency of need for repair as judged by the assessor. Priority 1 and 2 deficiencies have created, or will soon create, conditions that are potential safety hazards, are in extreme or accelerated deterioration, or are in failing and interrupted operations. Examples of these deficiencies include severely damaged or failing roof systems, branch wiring systems, cooling/heating distribution systems, structural supports, building exteriors, and fire alarm systems. Deficiencies in these priority categories should be addressed immediately (Priority 1) or within the next one to two years (Priority 2) as funding is available.

The majority of remaining current needed repairs that are not yet critical (Priority 3) require attention in the next three to five years (Priority 3) to avoid eventual deterioration, operational downtime, or eventual damage if not addressed.

These needs have been prioritized and are summarized below:

| Total Deficiencies | Priority for Repair |
|---|---|
| **$1,843,765** | **Totals** |
| $502,922 | **Priority 1** – Currently Critical (Immediate) Conditions require immediate action to correct a potential safety hazard, stop accelerated deterioration, or return a facility to operation. |
| $849,002 | **Priority 2** – Trending Critical (Years 1-2) Conditions, if not corrected expeditiously, could become critical within a year resulting in intermittent operations, rapid deterioration, potential safety hazards, etc. |
| $491,842 | **Priority 3** – Necessary/Not Yet Critical (Years 3-5) Conditions require appropriate attention to avoid predictable deterioration, potential downtime, or associated damage or higher costs if deferred further. |

## *Categorization of Needs*

**Category** – Total Deficiencies were broadly grouped by category, or type of deficiency. As expected, Deferred Maintenance represents the majority type of the deficiencies:

| Total Deficiencies | Category |
|---|---|
| **$1,843,765** | **Totals** |
| $950,228 | **Deferred Maintenance** - Includes major preventive maintenance, building system repairs and upgrades, and deferred maintenance activities that have been postponed due to funding priorities. |
| $48,800 | **Environmental** - Includes items that have been identified as potential non-conforming environmental health risk items, but have not yet been formally tested and determined to be a Compliance item. Includes the highest priority repairs to building systems where exposure to occupants may be imminent. These projects include repair and/or replacement of possible hazardous materials such as asbestos, lead paint, radon, mold and other volatile organic materials. |
| $475,472 | **Facility Integrity** - Includes items that have been identified as potential non-conforming items, but have not yet been formally tested and determined to be a Compliance item. Includes the highest priority repairs to building systems where failure may be imminent. These projects include repair and/or replacement of critical systems such as structure, roof, elevator, power, plumbing, heating, ventilation and air conditioning. If not funded, these projects may ultimately be performed under emergency conditions with possible consequential liabilities resulting from property damage and lost productivity. |
| $167,966 | **Compliance** - Includes items associated with federal and state compliance laws, such as the Americans with Disabilities Act (ADA), chlorofluorocarbon (CFC) elimination and disposal, asbestos abatement, indoor air quality (IAQ) initiatives, and other life-safety mandated initiatives. Includes items associated with jurisdictional fire, life-safety and building code issues. |
| $54,900 | **Safety** - Includes items that have been identified as potentially unsafe conditions. |
| $146,400 | **Modernization** - Includes items that have been identified as obsolete or non-conforming to current best practices or technologies. |

# 2015-2020 Funding Scenarios

With requirements prioritized and the assessment data in place, KLJ identified both current- and short-term budget requirements by developing the impact of different funding scenarios on the condition of the facility.

Referring to the facility assessment summary, the total Current Period (2015) and 5-Year Forecast Period (2016-2020) funding needs are approximately $1,843,765. In the analyses shown below, the facility condition data developed during the assessment were used to address four funding scenarios:

- **Scenario 1:** Do nothing. Under this scenario, none of the current deferred maintenance and forecasted system renewal needs are funded.
- **Scenario 2:** Maintain the current facility condition index of FCI = 18.87 percent, a level considered to be "fair" condition, by paying down only the annual forecasted capital renewal needs in level funding escalated 3.5 percent per year of about $113 thousand per year with total funding needs in the amount of $476,273. Under this scenario, none of the current deferred maintenance amount is paid down.
- **Scenario 3:** Funding to improve the facilities' condition from FCI=18.87 percent to FCI = 15.0 percent, a level considered to be "good" condition, to address both on-going capital renewal needs plus partially pay down existing deferred maintenance needs in level funding escalated 3.5 percent per year of about $180 thousand per year with total funding needs in the amount of $757,015.
- **Scenario 4:** Demolition. Under this scenario, the facility would be removed. Approximately 80% of the funding would come from the federal government, 10% from the state and 10% from the Minot Airport Authority. This approach is only good for the first two years following completion of the New Airport Facility.

## *Scenario 1—Do Nothing*

Funding needed to address the current facility condition deficiencies and system renewals over the forecast period 2015-2020 plan is unavailable. The table below indicates the annual FCI increase over the funding cycle based on the funding provided each year. The capital renewal column represent system renewal costs for each year, while the funding needs columns represent the zero payments that would offset the accumulating system renewal needs.

| Year | Capital Renewal | Funding Needs | FCI |
|---|---|---|---|
| 2015 | $0 | $0 | 18.87% |
| 2016 | $22,875 | $0 | 19.19% |
| 2017 | $28,657 | $0 | 19.59% |
| 2018 | $184,626 | $0 | 22.13% |
| 2019 | $176,146 | $0 | 24.57% |
| 2020 | $63,969 | $0 | 25.45% |
| **Total** | **$476,273** | **$0** | |

## *Scenario 2—Maintain the Current FCI (FCI=18.87%)*

Funding needed to maintain the current facility condition over the current and forecast period plan at the current facility condition index (FCI) of 18.87 percent, a level considered by many references to be “fair” condition. The yellow column indicates the annual FCI over the funding cycle based on the funding provided each year. The green columns represent system renewal costs for each year, while the orange columns represent the level payments of about $113 thousand escalated each year by 3.5 percent needed to offset the recurring system renewals.

| Year | Capital Renewal | Funding Needs | FCI |
|---|---|---|---|
| 2015 | $0 | $0 | 18.87% |
| 2016 | $22,875 | $0 | 19.19% |
| 2017 | $28,657 | $112,894 | 18.03% |
| 2018 | $184,626 | $116,916 | 18.96% |
| 2019 | $176,146 | $121,078 | 19.72% |
| 2020 | $63,969 | $125,385 | 18.87% |
| **Total** | **$476,273** | **$476,273** | |

## *Scenario 3—Improve the FCI to Good Condition (FCI=15.0%)*

Improving the condition under an increased funding program to achieve about 15 percent FCI improvement across the total portfolio, from 18.87 percent to 15.0 percent FCI, a level considered by many references to be good condition. . The yellow column indicates the annual FCI over the funding cycle based on the funding provided each year. The green columns represent system renewal costs for each year, while the orange columns represent the level payments of about $180 thousand escalated each year by 3.5 Percent needed to offset the recurring system renewals plus partially pay down existing deferred maintenance.

| Year | Capital Renewal | Funding Needs | FCI |
|---|---|---|---|
| 2015 | $0 | $0 | 18.87% |
| 2016 | $22,875 | $0 | 19.19% |
| 2017 | $28,657 | $179,794 | 17.10% |
| 2018 | $184,626 | $185,956 | 16.99% |
| 2019 | $176,146 | $192,332 | 16.86% |
| 2020 | $63,969 | $198,933 | 15.00% |
| **Total** | **$476,273** | **$757,015** | |

## *Scenario 4—Demolition*

The current assessment does not address costs to repurpose the facility. With the construction of the New Minot Airport the determination as to how to best use or repurpose the currently facility should be weighed. The properties located west of the new facility and along this corridor to the main highway are valuable to the Airport Authority.

The cost to remove the facility at a later date, beyond a two year period, will be to the expense of the Airport Authority. The majority of demolition costs prior to this period will be paid by the Federal Government and the State of North Dakota.

# Assessment Approach

## *OMAF Database Development and Analysis*

The OMAF assessment team completed the following tasks to develop the database for the assignment:

### TASK 1 – PROJECT MOBILIZATION

- Coordinated the assessment process with the OMAF staff.
- Reviewed goals and objectives and define proper classification of data elements.
- Discussed existing data relevant to the project

### TASK 2 – REVIEW OF EXISTING DOCUMENTATION

- Reviewed the existing facility drawings and records prior to data collection.

### TASK 3 – PHYSICAL SURVEY

- Physically surveyed the facilities and infrastructure assets defined within the scope of the project. The OMAF assessment team conducted a visual inspection of building systems and components.
- Developed budgets to help identify corrective scope of work budgets for identified facility deficiencies using RSMeans cost database.
- Provided digital photographs of facility to assess its general condition and the visual condition of any found deficiency. Photographs to be included in the final report.

### TASK 4 –DATA MANAGEMENT SYSTEM

- Initiated assimilation assessment data with existing OMAF facility documents, reports and drawings.

### TASK 5 – FACILITY CONDITION INDEX

- Developed a Facility Condition Index (FCI) and for facility in the assessment to quantify the deficiencies.

### TASK 6 – CAPITAL RENEWAL BUDGETS

- Developed forecasts for the renewal of building systems through short term life-cycle analysis.

### TASK 7 – DEFERRED MAINTENANCE DEFICIENCY MANAGEMENT

- Set up priority and category filter combinations for deficiency sorting and management.

# Definitions, Assumptions and Budget Models

The following terms and definitions are used throughout this report and are included below for clarification. Key database setup options and variables that affect the outcome of prioritization, ranking and costing are identified for review and consideration for further adjustment.

## *Assessment Level*

The OMAF 2015 Facility Condition Assessment was a basic Level 1 general assessment of building systems and their life cycles combined with an on-site physical assessment conducted by architectural, engineering and construction management experts to verify existing building systems condition and their major system component deficiencies, to determine OMAF facility capital renewal and deferred maintenance needs.

## *Database Facility Cost Variables*

Database cost variables used in the Pilot assessment include the following:

| Cost Variables | 2015 Assessment |
|---|---|
| **RSMeans cost data**<br><br>Database building current replacement value cost models and deficiency costs use current RSMeans cost data classifications and current city cost indexes. RSMeans cost data in the database can be updated annually by subscription. | 2015 data used |
| **Escalation Factor**<br><br>Database cost escalation factor are set to reflect predicted annual per year cost escalation that is included in all forecast cost reports and capital renewal predications. | +3.5% annual |
| **Priority Weighting Factors**<br><br>Deficiency Priority weighting factors are used to enhance the relative importance of individual deficiencies in the FCI calculations and report rankings | Level weighting used |
| **Facility Condition Index (FCI)**<br><br>FCI can be calculated and used to rank relative building renewal and correction needs. An Extended FCI (EFCI) can be calculated at a given year in the future using the accumulated deficiency cost over replacement value. | Cost of Repairs Current Replacement Value |

## *Facility Condition Index (FCI)*

The facility condition index (FCI) is a measure widely used in the building industry to represent the physical condition of a facility compared to its replacement value. It has been adopted and refined by numerous national facility maintenance, trade and facility administrator associations and is generally used as a means of comparing relative facility conditions. The FCI measures the estimated cost of the current year repair and replacement deficiencies, including recommended modernization improvements and grandfathered code issues, divided by the projected replacement cost of the facility replaced to contemporary construction standards and design best practices. The result of this division is an index, generally expressed as a percentage, which is the FCI. The higher the FCI, the poorer the relative condition of the facility.

$$FCI = \frac{Repair\ and\ Renewal\ Needs}{Current\ Replacment\ Value}$$

KLJ has routinely found existing average building conditions throughout the United States to fall within the range of 20%-30% FCI, and KLJ recommended the following guides used in this report:

| Rating | MDFP Guidelines | Report Guidelines |
|---|---|---|
| Good | 0.0—5.0% | 0.0—15.0% |
| Fair | 5.1—10.0% | 15.1—30.0% |
| Poor | 10.1—100% | 30.1—100% |

## *Deficiency priority definitions*

Each deficiency was assigned a preliminary priority number of 1 through 3, to reflect that deficiency's priority status as determined by the assessment team. (NOTE: These deficiency priority settings are internal to the database and do not reflect the project priority setting assigned to proposed repairs or improvements as determined by OMAF in their capital plan funding requests).

The following list provides a brief summary of each data priority in the database:

| Deficiency Priority # | Description |
|---|---|
| 1 | **Critical—Immediate Need**<br>Used only for critical issues that may pose immediate threats to the life, health or safety of persons within the facility. Examples include:<br>• Obvious or suspected asbestos containing materials; potential release into the air<br>• Unprotected exit corridors<br>• Serious code violations such as blocked egress, improper fire detection/warning, electrical hazards, structural failures, emergency lighting, etc. |
| 2 | **Trending Critical – 1-2 Years**<br>Assigned to systems or deficiencies that are mission critical and beyond useful life. Examples include:<br>• A system that is in serious disrepair or where failure is imminent<br>• Severely damaged systems |
| 3 | **Necessary – Years 3-5**<br>Assigned to systems or deficiencies that should be repaired to mitigate additional damage, and systems that are beyond expected life. Examples include:<br>• Roofs that are leaking<br>• Exterior walls, doors, window systems that chronically leak.<br>• Inadequate ventilation systems that could result in moisture damage or mold creation. |

## *Deficiency Categories*

The assessment adopted the following deficiency categories to reflect typical assessment industry nomenclature:

| Category | Description |
|---|---|
| **Deferred Maintenance** | Includes major preventive maintenance, building system repairs and upgrades, and deferred maintenance activities that have been postponed due to funding priorities. |
| **Environmental** | Includes items that have been identified as potential non-conforming environmental health risk items, but have not yet been formally tested and determined to be a Compliance item. Includes the highest priority repairs to building systems where exposure to occupants may be imminent. These projects include repair and/or replacement of possible hazardous materials such as asbestos, lead paint, radon, mold and other volatile organic materials. |
| **Facility Integrity** | Includes items that have been identified as potential non-conforming items, but have not yet been formally tested and determined to be a Compliance item.<br><br>Includes the highest priority repairs to building systems where failure may be imminent. These projects include repair and/or replacement of critical systems such as structure, roof, elevator, power, plumbing, heating, ventilation and air conditioning. If not funded, these projects may ultimately be performed under emergency conditions with possible consequential liabilities resulting from property damage and lost productivity. |
| **Compliance** | Includes items associated with federal and state compliance laws, such as the Americans with Disabilities Act (ADA), chlorofluorocarbon (CFC) elimination and disposal, asbestos abatement, indoor air quality (IAQ) initiatives, and other life- safety mandated initiatives. Includes items associated with jurisdictional fire, life- safety and building code issues. |
| **Safety** | Includes items that have been identified as potentially unsafe conditions. |
| **Modernization** | Includes items that have been identified as obsolete or non-conforming to current best practices or technologies. |

## *Cost models*

The database incorporates RSMeans derived current replacement value (CRV) cost models to assign life cycle costs to the various systems within a building. Cost models are detailed to Uniformat II – Level 3 building systems and assigned costs-per-square-foot or lineal foot replacement values. Models are designed to represent a client specific facility that meets local standards and cost trends.

## *Current replacement value (CRV)*

Replacement value represents the hypothetical cost of rebuilding or replacing an existing facility under today's codes and construction standards, using its current configuration. For example, an existing building that currently does not have a fire sprinkler, but requires one under today's codes, would include costs for this system as part of its replacement value. It is determined by multiplying the gross area of the facility by a square foot cost developed in that facility's schedule of values cost model. Replacement cost includes construction costs and owner's additional or "soft" costs for fees, permits and other expenses to reflect a total project cost.

## *Additional Costs—Soft Costs*

Additional costs or "soft" costs are costs that are necessary to accomplish the corrective work but are not directly attributable to the deficient system's direct trade construction cost, nor are included in a general contractor estimate or bid number, often referred to as "hard cost". Soft costs vary by owner but typically include architect and contractor fees, contingencies and other owner incurred costs necessary to fully develop and build a facility. Soft costs used in the database include the following budget items:

| Soft Costs |
|---|
| Escalated CCL - Construction Estimate w/GC OH&P |
| Offsite Development |
| Temporary Buildings |
| Project Contingency |
| Project Construction Budget (PCB) |
| FF&E for Facility |
| FF&E Contingency |
| Base Design Fee - AE |
| Add Services for Design AE |
| AE Reimbursable |
| Haz-Mat Abatement |
| Haz-Mat Contingency |
| Haz-Mat Sample/Monitoring & Hazmat Design Fee |
| Land Survey for Existing Facility |
| GeoTech |
| Material Testing, Text & Bal, Roof Insp, TAC, Comm. |
| Test & Balance |
| Roof Inspection |
| Energy Mgt Design, Energy Audit Permit Review |
| Energy Mgt Contracted Work |
| Energy Mgt Contracted Work Contingency |
| Printing / Miscellaneous Costs |
| Bid Advertisements |
| Permits & Fees |
| Moving Expenses |
| Overtime-Custodial Support |
| Program Manager Fee |
| Program Manager Reimbursable |
| OMAF Program Costs |
| Program Contingency |

## *Rough order of magnitude repair budgets*

These are the budgeted costs to make partial or full replacement of expired systems, costs for out of cycle repair adjustments and costs for condition, suitability and sufficiency deficiencies. Because budgeted repair costs typically include budget elements in addition to condition repair costs of a current facility, modernization upgrade items, area sufficiency items, etc., the total order of magnitude repair costs can exceed the current replacement cost.

Order of magnitude repair costs are budget numbers, not actual project costs. The facility condition assessment data should not be considered specific scope of work descriptions for individual buildings; rather it is a repair-program budgeting tool that offers reference data for the repair planning process.

Within a construction project program, substantial cost differences may be recognized from the estimated cost figures provided in the database, depending on the method of repair procurement, the construction market at the time and the actual scope of work anticipated. Detailed engineering studies may also be required to fully determine costs associated with individual component failures that were beyond the scope of the assessment.

The scope of the assessment findings and the figures contained in the database do not include additional renovation costs and mark-ups that may be recommended as part of the project analysis or within the business units' proposed comprehensive repair program, of which the facility assessment is one input component. The assessment also does not include information regarding the affordability of any potential repairs or replacements, nor does it prioritize the business units' objectives that will become a major component of any facility repair plan.

## *Life cycles*

KLJ assigned expected life cycles to all the building systems based on Building Operators and Managers of America (BOMA) recommended cycles, manufacturer's suggested life, and with RSMeans recommended component and material life based on their historical records. BOMA standards are a nationally recognized source of life cycle data (based on its member's historical data) for various components and/or systems associated with facilities. RSMeans is a national company specializing in construction estimating and costs.

## *Renewal factors*

Renewal factors represent the difference in cost of renovating or replacing an existing system, rather than new construction of a building system. For example, installing a new built-up roof on an existing building would include the effort of removing and disposing of the old roof, a cost not associated with new construction. Typical renewal premiums assigned to account for demolition and other replacement preparation costs are about 110% of the system or component raw budget cost.

## *System generated deficiencies*

The database software automatically develops system deficiencies based on system life cycles using the systems' installation dates as the base year. By adjusting the Next Renewal date ahead or behind the predicted or stated life cycle date, a system cost will come due earlier or later than the originally installed life cycle date. This utility accounts for good maintenance conditions and a longer life, or early expiration of a system life due to any number of adverse factors such as poor installation, acts of god, material defects, poor design applications and other factors that may shorten the life of a material or system.

## *Building systems*

The database incorporates Uniformat II to organize building data into replacement cost models. Uniformat II was originally developed by the federal General Services Administration to delineate building costs by systems rather than by materials. Uniformat II was formalized in an NIST standard, NISTIR 6389 in 1999. It has been

further quantified and updated by ASTM standard 2005, E1557-05. The Construction Specifications Institute, CSI, has taken over the standard as part of their MasterFormat / MasterSpec system.

## *Reference organizations*

Several organizations are referenced throughout the document and include:

| Acronym | Organization |
|---|---|
| **ASTM** | ASTM INTERNATIONAL: International standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services. |
| **BOMA** | BUILDING OWNERS AND MANAGERS ASSOCIATION:<br><br>National organization of public and private facilities focused on building management tools and maintenance techniques. |
| **RSMeans** | RSMEANS: Primary national company specializing in construction cost data. |
| **CSI** | CONSTRUCTION SPECIFICATIONS INSTITUTE:<br><br>Primary national organization specializing in construction materials data and data location in construction documents. |
| **NIST** | NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY:<br><br>Agency in the US federal technology administration that makes measurements and sets standards as needed by industry or government programs |