

Maintainability Review of Recently Completed Construction

Balch Hall
NCRE
Tang Hall
Atkinson Hall



Facilities Engineering
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Background

The objective of this study was to conduct a comprehensive review of maintainability of recently completed buildings with the following goals:

- Assess the total cost of ownership of major building systems.
- Evaluate access, service requirements, ease and availability of maintenance, and complexity of installed systems.
- Propose actionable recommendations to address excessive, costly, or difficult maintenance items.
- Provide recommendations on improving the University Design and Construction Standards, construction methodology, commissioning requirements, spare parts, and staff training.



Process

Project initiation/Smart Goal

- Selected recently completed facilities to capture current code and material/market driven items.
 - Balch Hall
 - NCRE (5 facilities)
 - Tang Hall
 - Atkinson Hall

Data collection and Interviews

- Prepared detailed questionnaire and distributed to FM Maintenance Planners and Unit Facilities Directors.
- Data collection by Maintenance Planners and UFDs in advance of interview sessions.
- Interviews (+/- 2 hr) with FE section leaders, UFDs and facility staff, Maintenance Planners.

Identification of Themes and Prioritization

- Cross reference interview notes and transcripts, pull out thematic issues.
- Review and prioritize themes with FM and E&PM Leadership.

Solutions and Reporting

- Identify next steps to address highest priority deficiencies.
- Prepare summary white paper report.



Solutions and Next Steps

Items identified as either high priority or lowest effort have been identified for resolution in the short term (6 months).

Actions stemming from these efforts will include:

- Updates to the Design and Construction Standards.
- Checklist and process improvements.
- Contract document edits.
- Best practice education.



High Priority Items

The highest priority systems and processes identified for resolution include:

- Hard surface ceilings
- Custom wood ceilings
- Oversized acoustic ceiling panels
- Oversized exterior doors
- Commercial kitchen doors
- Lighting control complexity
- Access control complexity
- Follow through on design review comments “resolve in field”



Low Effort Items

In addition, those items not identified as high priority, but that require a low level of effort to resolve include the following systems/processes:

- Spray applied acoustic ceilings
- Drywall protection in common spaces
- Cleaning/lubrication of window systems prior to acceptance
- Tensioned blind systems
- Prefabricated bathroom pod use
- Heat recovery system sealed bearings
- Air handler unit motor selection
- Constructed wetland systems
- Fastened roofing systems
- Specific brand material failures (5)
- Turnover, roofing trades, and duct cleanliness
- Ice melt system locations
- Exterior concrete sealing at entrances
- Cleaning access for grease traps and laundry exhaust



Positive Feedback

- All interviewed parties highly value FE construction quality assurance services.
- Hiring an independent third-party envelope commissioning agent has provided good value with intensive coordination and quality control with contractors observed during construction.
- Modular furniture systems both in common areas as well as laboratories provides flexibility for both frequent space rearrangement and space use conversion without the need for construction.
- Conducting Maintainability Review interviews will help Cornell Facilities learn and improve.

More to Come!

A draft of the summary report is currently being circulated for review.

As standard, document, and process improvements are implemented, we will communicate regarding changes and updates.

Questions?