



Factors that Affect Maintenance Trade Staffing Models

By Matt Adams, P.E.

Recently the facilities administration of Arizona State University began to use the APPA staffing guidelines to model their requirements. This work led to some questions about using the reference books and if there are other factors such as campus population density that would impact the three models of trades, housekeeping, and grounds. While it was quickly concluded that density does affect custodial operations and not grounds operations, the trades were less clear. This question started a dialogue that resulted in some interesting discussions and perhaps conclusions.

NO TWO CAMPUSES ARE ALIKE

First of all there is the reality that no two campuses are exactly alike. Some are rural and some are urban. The funding levels vary full spectrum. The types and sizes of the facilities vary with the academic mission. Naturally there are regional climatic factors that play as well. Given all of this, what additional factors really *do* impact the models, or even better, what factors can be manipulated to further rationalize and exploit the models?

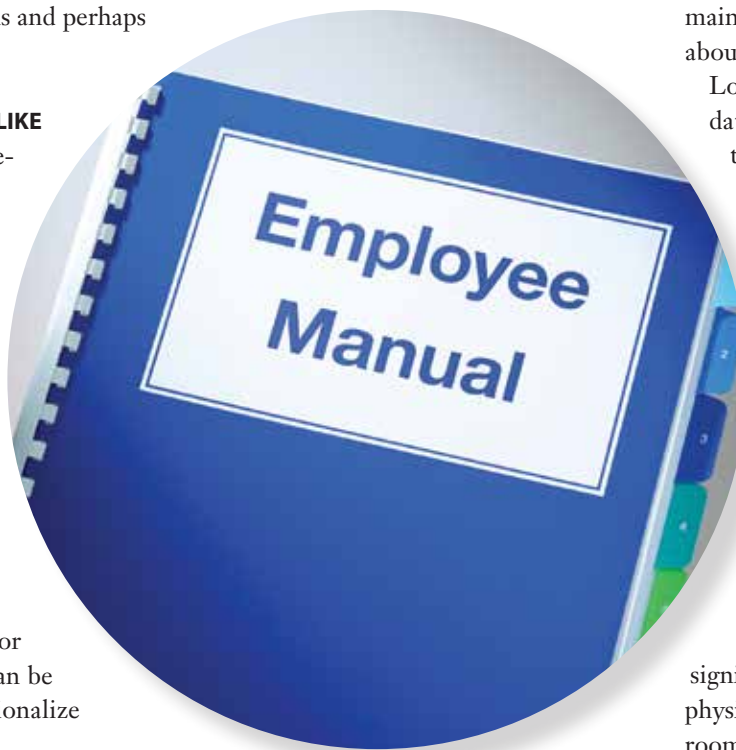
To figure this out one must first acknowledge that skilled labor is the constraining factor of the problem (model). From there we can list many factors that impact positively and negatively the maintenance requirements (skilled trade hours) of our campuses. Many surveys have concluded the fact that in facilities management the most satisfied skilled workers are those that have the fewest obstacles and the most time to perform their respective jobs well. As managers, creating this environment should be our goal.

TRAVEL

For the skilled trades and grounds staff, travel is a relevant factor. Everyone knows anecdotally that travel to and from performing services uses valuable time but few know how much. There is data out there that allows for high-level analysis and can result in policy changes. For example, from time studies performed by the University of Miami in years past, we know that a central dispatched maintenance force uses approximately 35 percent of its labor traveling. Alternatively, a zoned maintenance staff with truck stock uses about 22 percent.

Looking at Google Maps or the FPI data you can compare your campus to U of M and see if you would be taxed even further if you are centralized and larger than the Coral Gables campus. Most APPA professionals believe in the benefits of zone deployment. Nevertheless, the “travel” factor remains an adjustment to staffing models. The average length of trips multiplied by the daily average volume impacts larger spread-out campuses more than compact urban campuses.

If you determine that travel is significant because you have an off-site physical plant office or off-site stockroom, you can estimate the cost using



the factors above multiplied by the fully loaded cost of the skilled staff involved.

WORK RULES

A second factor involves work rules. Many of our peers have one or more collective bargaining agreements. In addition, some that are not unionized have unique policies regarding work rules. The stricter the delineation of trade specific labor in your work, rules the greater the impact on your staffing model.

It is true that most basic preventive maintenance activities are based on a single trade. However, other work, rules associated with breaks, lunch, and mandatory two-person teams certainly affect staffing models as well.

CAMPUS DENSITY

Density of the campus as a factor demonstrates the need to apply changes to the models carefully. Some have said that denser campuses require more maintenance due to increased “wear and tear.” This seems like an oversimplification.

If the buildings on campus were designed with a more typical density in mind and this increased dramatically over time, the original conclusion might hold true for some areas. However, architects and engineers design buildings with the density, traffic, and load in careful consideration so that equipment is installed in quantity and quality to meet such density.

Take for instance bathroom fixtures. The number of bathrooms and fixtures specified in the designs take into consideration the density of traffic of faculty, staff, and students. There will likely be more fixtures throughout the facility, but they will be used at a similar rate as at a less-dense facility. So this makes it interesting. The same impact results, but the reason changes. There is more maintenance for some items like bathroom plumbing fixtures resulting from an increased number of fixtures and not more rapid failure.

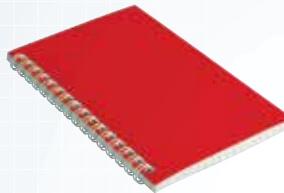
What building assets might fall into the same category?

- Elevators—clearly specified for traffic density
- Primary entrance doors and associated hardware—perhaps adding work for the carpenters for maintenance and repair. However, it’s not much in

the big scheme of things. The number and size of doors is still a result of fire codes and egress traffic density.

- Longer run times for HVAC equipment—only if the facilities were not properly designed to accommodate the increased density. If so, this is of little impact unless multiple substan-

Guess Which One Doesn't Belong at a Desk.



A



B



C



D

Students deserve to learn and grow in school buildings that are clean, safe and leak-free. That's why you need Tremco Roofing and Building Maintenance. We've been preventing and solving roofing problems for our education customers for decades. So students can focus on opening their minds instead of their umbrellas.

Join us at the 2015 APPA Annual Conference and Exhibition, Booth #509



To learn more about how Tremco Roofing can provide you with roofing and weatherproofing peace of mind, visit tremcoroofing.com.

© 2015 Tremco Incorporated.

TREMCO
ROOFING & BUILDING MAINTENANCE

standard systems are installed such as split systems or heat pumps.

- Increased wear and tear on water coolers or increased maintenance because of larger number of units installed to accommodate density.
- Bathroom plumbing fixtures, again based on original design, could be either more of them or more use of too few of them.
- Lighting—no impact that I can determine.
- Low-voltage systems, fire and BAS are not really impacted by density.
- Electrical supply, branch wiring are not statistically significant.

On the other hand, density might impact maintenance costs in other ways not related to the actual wear and tear on assets:

- Typically a dense campus means the trades don't have as much travel times considering they often use "mules" with shop stock on board and park next to the facility. This saves trade FTE time.
- Most dense urban campuses have fewer buildings due to the scarcity of land, but larger buildings on average. I would approximate the average GSF of all general fund facilities in the U.S. to be about 55-60k GSF. I would also guess the average GSF for dense urban campuses like ASU to be more like 100k+ GSF.

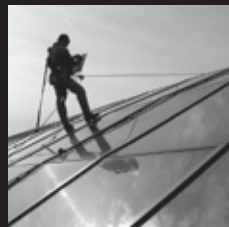
Why does this matter? The larger a building is built the more robust and heavy duty are its HVAC systems with less overall maintenance. In fact, large dense buildings often need little or no heating and only cooling,

and this is provided by large industrial-grade systems that are designed to run for a very long time.

CONCLUSION

In the final analysis creating your own staffing models provides insight into your operations in more than just a budgetary way. While trying to identify those factors that make your campus unique you will also find potential areas of improvements. This can come in the form of design standards, maintenance resource deployment strategies, and/or rationalized work rules. ☺

.....
Matt Adams is president of Adams FM², Atlanta, GA. He can be reached at matt@adamsfm2.com.



CELEBRATING 50 YEARS

GALE

**ENGINEERS & DESIGN
PROFESSIONALS**

*Specializing in Educational Facilities
since 1964*

Gale Associates, Inc.
800-366-1714
ejm@gainc.com
www.galeassociates.com

Building Envelope/Structural Services:

- Facade, curtain wall, roof, waterproofing, and structural evaluation and design
- Construction administration (CA) and on-site monitoring
- Building enclosure commissioning (BECxP): peer review, design assistance, and CA
- LEED-certified, sustainable design, historic facilities
- Multi-facility assessments and building envelope management programs

Athletic and Recreation Facilities Design Services:

- Comprehensive athletic campus evaluation and master planning
- Athletic facilities planning, permitting, and programming
- High-efficiency lighting, minimizing off-site impacts
- New track facilities, track renovations, and conversions
- All types of synthetic and natural turf fields

BOSTON

BALTIMORE

ORLANDO

SAN FRANCISCO

WASHINGTON, D.C.

HARTFORD