Team Cleaning: Pilot Testing

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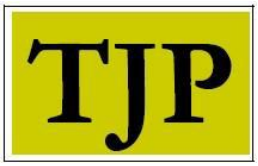

Abstract

Team cleaning could increase productivity by more than 50%. It relies on three or more cleaning employees to perform specialized tasks. Designers of a good team cleaning program initially create it on paper, then pilot test it to ensure that it is devoid of inefficient tools and equipment (Frank, 1999). Implementing team cleaning requires managerial commitment and upfront efforts, such as space analysis, workloading, acquisition of new equipment, training, and addressing personnel and union issues. The primary goal of team cleaning is to improve cleaning and simplify the cleaning process. It is, therefore, management's responsibility to guide the organizational change by ensuring commitment, upfront efforts, tools/equipment, and assigning champions to implement the team cleaning concept.

Introduction

Team cleaning relies on multiple individuals to go through an area or building systematically and autonomously, performing specific (predetermined) tasks. It is different from area, zone, or gang cleaning (Walker, 2003); it relies on three or more cleaning employees to perform specialized tasks. Meyers (2003) noted that it has allowed hospitals to realize savings of 10 to 20 percent due to gains in productivity and reduced equipment and supply costs. It has also been useful in the school environment (Barry, 1997). For instance, Cooney (2002) noted that the Washoe County School District achieved $180,000 in savings at the end of a one-year pilot program for team cleaning twelve elementary schools and two high schools.

Team cleaning is a process with clearly defined, actionable, and measurable tasks. Therefore, it requires a thoughtful design to maximize quality and minimize cost. Frank (1999) noted that good cleaning programs are first created on paper and pilot tested to ensure that they are devoid of inefficient tools and equipment. According to Harris (2005), team cleaning could increase productivity by more than 50%, but he acknowledges that it is not easy to implement. Walker (2003) notes that it will take two months or more to set up. Implementing team cleaning requires managerial commitment and upfront efforts, such as space analysis, workloading, acquisition of new equipment, training, and addressing personnel and union issues. Perhaps for these reasons, some have argued that team cleaning will not work in their particular situation.

However, Walker (2003), from Janitor University, indicated that they have been able to develop team cleaning strategies that work well for every case presented to them.

The primary goal of team cleaning is to improve cleaning and simplify the cleaning process. It is, therefore, management's responsibility to guide the organizational change by ensuring commitment, upfront efforts, tools/equipment, and assigning champions to implement the team cleaning concept. Champions must thoroughly understand the concepts, as well as organizational change, and must have good interaction with staff. Furthermore, they should be capable of assessing and documenting the current cleaning procedures and tools/products used. Likewise, they should be capable of accurately mapping and documenting the new process. That is, determining the cleanable area, floor finishes, cleaning frequencies, accountability, training, etc. The new methods should be simple and task descriptions well defined and documented on job cards (Walker, 1997).

Champions should be familiar with the cleanable space configuration. A physical walkthrough of the building allows for documentation of the "as is" conditions, existing cleaning levels, challenging areas, floor types and conditions, the current allocation of cleaners and cleaning equipment. Moreover, a walk-through with stakeholders allows for envisioning the "to be" conditions. The "to be" conditions should be documented and validated with staff and stakeholders; they will become the basis of the tasks on the job cards.

For Walker (2003), improved productivity is the most significant advantage of team cleaning. His typical example is an eight-story building, with one janitor per floor covering 12,000 square feet in a four-hour shift, performing every cleaning task. He notes that the outcome is eight people and eight sets of cleaning equipment and tools (vacuums, cleaning carts, trash barrels, restroom carts, etc.). With team cleaning, in the same building, using backpack vacuums, only six cleaners are needed. A pair of light-duty and vacuum specialists for floors 1 through 4 and an identical pair for levels 5 through 8; the restroom and utility specialists work throughout the entire building. Thus, Walker notes that team cleaning uses fewer resources than zone cleaning.

Background

Sandia National Laboratories, a government facility in New Mexico, determined that a successful team cleaning implementation required acceptance of the concepts. Therefore, they made sure that managers and supervisors understood the concepts by attending Janitor University (Campbell, 2004). Campbell noted that during implementation, Sandia made employee health and wellness a significant priority. For instance, time was set aside on cleaners' job cards for stretching, and custodians were encouraged to report any work-related injury. With the wellness program and team cleaning, Sandia improved morale and the health of employees. Thus, the success of

Sandia's team cleaning may be due to perceived organizational support. That is, cleaners may have felt that the organization was looking out for their best interest and reciprocated in kind.

Boeing with 17 million cleanable square feet, 1,700 restrooms, 15,000 offices, and a score of conference rooms, manufacturing areas, clean rooms, data centers, and secured areas also improved cleaning efficiencies by adopting team cleaning techniques (Jones, 2002; Campbell, 2004). Jones noted that the impetus for change began with Boeing executives seeking ways to improve efficiencies and standardize tools and processes. She also stated that they wanted to track costs and benchmark performance. Thus, the hierarchy of these two organizations recognized the need for change. And, like Sandia, Boeing used the cleaning program designed by John Walker for Janitor University.

Concepts4 also uses John Walker's cleaning concepts in their two-day team cleaning seminars. Concepts4 seminar prepares attendees to develop a cost-effective cleaning program. It focuses on cleanable square feet (CSF), understanding finishes, cleaning frequencies, production capacity, accountability, training, and inspection. Additionally, they emphasize the creation of a good cleaning program on paper and subsequent pilot testing to ensure that it is devoid of unnecessary tasks and wasteful motions (Frank, 1999). Using information from the Concepts4 seminar, including John Walker's action kit, "The Concept of Team Cleaning," attendees should be able to assess CSF, develop workloading and assignments, select the proper tools, and design an effective cleaning program.

The need for change

DePree (1987) noted that the first responsibility of leadership is to define reality, and the last is to say thank you; between the two, the leader must become a servant. However, reality must first be understood before it can be defined. That is, leaders must be able to accurately identify and develop a model that captures cleaning challenges and opportunities. The nature of the critical problems and the roots of ineffective outcomes will determine the need for change. It should unambiguously show that moving from an existing inefficient state to a new state is beneficial.

Moreover, management should clearly explain the benefits of the change to all affected stakeholders and strategically broadcast it throughout the facility. For instance, the need for changing cleaning methods should be predicated on cleaning for health, safety, quality, repeatability, consistency, and efficiency. Additionally, stakeholders' involvement and influence should be paramount in the process of change. In essence, stakeholders must understand that the organization needs employees' inputs and help to test and validate the viability of the team cleaning concept, as well as to establish measurable and repeatable standards. According to DePree, effective leaders

encourage stakeholders to voice contrary opinions, which is an essential source of validity.

In the process of change, it is crucial to recognize that leadership is not about making followers do what they would not otherwise do, but instead inducing followers to act on shared goals (Burns, 1978). Burns notes that change can be transactional or transformational; the former, however, is a mere exchange relationship, and the latter involves mutual leader and follower interest in raising motivation and morality. Transformational leaders motivate employees to do more than they intended to do, and often more than they thought possible (Bass & Avolio, 1994).

Implementing Team Cleaning

Meyers (2003) highlighted consensus-building, plan development, training and implementation, monitoring, and refinement as necessary conversion steps in the implementation of team cleaning. She further argued that it is crucial to have a committed and involved champion with a thorough understanding of the team cleaning process. Additionally, she noted that the process is unlikely to succeed without supportive management. It is also essential for supervisors to understand how team cleaning works and its associated advantages to the employees and the organization.

Consensus-building – Often, the consensus for organizational initiatives is difficult to achieve, because management may implement initiatives without staff inputs and expects agreement by mandate. However, consensus cannot be mandated. The best way to reach the consensus is to inform staff of the purpose and importance of the initiative and establish procedures for employee inputs. The employees want to know that the decision-making process is fair, it adheres to rules of fairness, such as consistency, bias suppression, accuracy, representation, correctability, and ethicality (Colquitt et al., 2002; Leventhal, 1980).

Plan development – Planning, as well as consensus-building, requires knowledge of organizational development, organizational challenges and opportunities, and specific team cleaning process knowledge; so floor configuration, staffing requirements, and work assignments can be evaluated and optimized. Sandia, Boeing, and others recognized that to succeed, it was not only essential to understand the process but also to solicit inputs from employees and outside experts.

Training and implementation – Meyers (2003) noted that training for team cleaning is not difficult since the actual tasks will not be new to cleaning employees and that the significant change involves the use of the backpack vacuum and processes inherent to team cleaning. Employees will need to learn how to properly wear the vacuum to prevent injury and increase productivity, and mitigate nuances associated with team cleaning. Monitoring and refinement – Monitoring is essential because the process

seldom works on its own. Moreover, control and feedback from staff and customers are necessary for refining the process.

Developing a pilot testing plan

The introduction of team cleaning is contingent on top management's understanding of the benefits that it can achieve. Thus, executives responsible for facilities maintenance should have in-depth knowledge of existing cleaning outlays and the potential savings that can be made with team cleaning. If the benefits of team cleaning are, as predicted by proponents and users, between 20 and 50 percent productivity gain. Then, it is prudent to pilot test the concepts to validate potential savings. However, a valid pilot test requires top management support; without it, testing is unlikely to represent the true potential of team cleaning. Therefore, pilot testing team cleaning should be a component of top management and the implementation site's goals and an organizational priority. Once senior management commitment is obtained, and framed within the balanced scorecard, a group, within the building, prone to organizational learning should be selected.

The area floor plan should be diverse and encompass between 40,000 or 80,000 cleanable square feet (CSF). The cleanable area should include workspaces, restrooms, offices, conference rooms, hallways, etc. Furthermore, it should be subdivided into quadrants, and the most efficient cleaning route from the nearest janitorial closet (JC) to all four quadrants and back to the JC should be selected. The route within, and to, all quadrants should be devoid of repetitive motions or path reversals. Moreover, specialists should be instructed to bypass areas that do not need cleaning: specialists should not clean what is clean. A specialist is a cleaning member with specific duties. Team cleaning is task-driven and generally segregated into the following responsibilities:

- Light duty specialist (LDS), which involves dusting, emptying trash, and spot cleaning
- Vacuum specialist (VS), which consists of vacuuming carpets and hardwood floors
- Restroom specialist (RS), which requires cleaning, sanitizing, and restocking supplies in the restroom
- Utility specialist (US) involves cleaning lobby areas, spot cleaning glass, mopping and scrubbing hardwood floors, and hauling trash to a dumpster from central collection points (Harris, 2005).

The organization should cross-train specialists for backups. Additionally, when specialists are absent, a strategy should be in place to cover the duties of the missing specialists or to redistribute the workload (Walker, 2003). It is also important to reevaluate the formal and informal communication system. For instance, managing by

"wandering around" will enable supervisors to interact with specialists and reinforce desired behaviors through public acknowledgments, as well as to facilitate learning privately. Furthermore, there is a need to develop a specific type of communication between specialists, particularly between the LDS and the VS. Therefore, it is essential to establish a communication protocol between them. For example, if the LDS goes into a conference room and recognizes that the floor is clean, closes the door to indicate to the VS that vacuuming may be omitted.

Cleaning is the process of locating, identifying, containing, removing, and properly disposing of unwanted substances from a surface or environment. Team cleaning uses three types of cleaning: routine, detail, and project. Routine cleaning is the minimum daily cleaning requirement. The detail is in-depth, thorough, weekly cleaning of all surfaces, wall to wall with a focus on health, safety, and indoor air quality (IAQ). Project cleaning often exceeds routine or detailed cleaning; it may include floor stripping, carpet extraction, or any infrequent cleaning tasks.

Table 1 depicts the types of team cleaning and corresponding frequencies.

	Quads	M	T	W	TH	F
Routine: Involves cleaning all quadrants daily Monday through Friday.	1	✓	✓	✓	✓	✓
	2	✓	✓	✓	✓	✓
	3	✓	✓	✓	✓	✓
	4	✓	✓	✓	✓	✓
Detail: Includes one quadrant per day, Monday through Friday.	1	✓				
	2		✓			
	3			✓		
	4				✓	
Project: Cleaning performed on Fridays, completed monthly.						✓
						✓
						✓
						✓

Table 1 – Types of team cleaning from "The Concept of Team Cleaning."

For each quadrant, the site should determine the required level of cleanliness that enhances the efficiency, health, and safety of occupants. Additionally, they should evaluate the tasks necessary to achieve the required level of cleanliness. The tasks should be listed by specialists, with estimated completion times. Thus, the cleanliness level (requirement definitions) should be time-bounded. For instance, within a 40,000 CSF, "routine cleaning" for the light-duty specialist (LDS) and vacuum specialist (VS) for all quadrants should occur Monday through Friday and be limited to approximately 45 minutes for each part-time equivalent (PTE) specialist. "Detail cleaning" should occur once a week for each quadrant and be limited to about one hour and thirty minutes for each PTE specialist. If we chose 80,000 CSF for full-time equivalent (FTE) specialists,

we would double the time spent in each quadrant. "Project cleaning" occurs on Fridays for alternating quadrants and may be completed monthly.

Generally, the LDS empties trash and recycling bins, dust, cleans telephones and spots clean horizontal and vertical surfaces. The VS follows LDS for about 10 to 20 minutes, checks the trash, vacuums floors/high traffic areas, turns the lights off, and secures the area; during the first 10 to 20 minutes, the VS may be assigned to vacuum the stairwell or some other productive assignment. The restroom specialist (RS) fills dispensers, empties restroom garbage, cleans and disinfects fixtures, mirrors, partitions, ceilings, walls, and floors, as well as drinking fountains. The utility specialist (US) hauls out the trash to the dumpster, cleans brass, blinds, and carpet, mops entry tile, handles light maintenance and other specialty services. Often the US is the lead specialist.

Setting up Team Cleaning

Labor is the most significant expense for cleaning operations. Therefore, workloading is necessary to determine proper staffing, to balance quadrant assignments, and to allocate equipment properly. Additionally, existing problem areas, as well as activities/accessibility of cleaning spaces and objects, must be identified and included in the workloading process. Workloading is the process of correctly scheduling the appropriate number of people to clean a facility. Walker (2006) notes that when workloading a site, it is essential to consider the task, time, and frequency of labor. Normal start and finish times, and breaks should also be included in workloading. Initial workloading emphasis should be on the primary members of team cleaning, which are the light-duty and vacuum specialists. Generally, these two positions represent 70-85% of cleanable space.

Walker (1997) recommends starting team cleaning with the best cleaners, the ones who get their jobs done without becoming irritated or exhausted. Use these employees to help develop the required tasks and the "right way" to perform each task. Walker also recommends that the best employees in each specialty should teach the established "best practice" skills to others in that specialty. Similarly, he recommends using the inputs of experienced cleaners to determine the right tools and equipment for each job and to standardize on these items, as well as on the procedures and work patterns. Concepts4 believes that each specialist can produce an average of 10,000 to 12,000 Sq. Ft./Hr. They also indicate that techniques, materials, and equipment influence cleaning efficiency.

Concepts4 seminar, conducted by Jim Harris, Sr., stresses the importance of taking time to develop the team cleaning plan. Solomon (2001) and Meyers (2003) note that outside consultants, as well as software programs, can help determine CSF, types of tasks, the number of employees, assignments, and approximate time needed to clean an area. The job assignment should be precise and straightforward. Color-coded cards

listing each cleaning task with the required time are often used for each specialty (Walker, 1997). According to Harris, organizations should first start with a pilot program. He believes that one of the most important elements in the implementation of team cleaning is the process of testing every assumption or idea to ensure that it works; it is repeatable and measurable. Concepts4 also stresses production rates (PR). A production rate is the amount of time it takes to perform a given task or the number of functions that can be completed in a given time. That is, the actual production rate should be used as a benchmark to determine if team cleaning is more cost-effective.

Blueprints of the building are necessary for identifying cleanable square feet, for efficiently assigning quadrants, for determining frequencies, and for developing production rates. If possible, quadrants should be divided into the most significant cleanable space of like-cleanable areas. Like-cleanable areas minimize tool/equipment and solution changeovers. Table 2 summarizes a typical frequency chart.

Frequency	Annual Frequency
Five-day service (daily)	260
Twice weekly	104
Weekly	52
Monthly	12
Quarterly	4
Twice yearly	2
Yearly	1

Table 2 - Frequency Chart

The following steps are necessary for workloading:

1. Determine cleanable square feet, as well as cleanable objects (chairs, tables, desks, etc.) within the cleanable area. Harris from Concepts4, notes that restrooms, stairwells, and elevators should be subtracted from the cleanable area. For restrooms, count fixtures (i.e., sinks, toilets, urinals, etc., use 2.5 minutes per fixture); for stairwells, count number of flights – use 8 minutes per flight; and for elevators – use 10 minutes per cab. Divide the net cleanable square feet (CSF fewer restrooms, stairwells, and elevators) into quadrants of 20,000 square feet (SF) when considering FTE and 10,000 SF when considering part-time equivalent (PTE). Concepts4 recommends using 10,000 SF/Hr for LDS and VS; 60,000 SF/Hr for removing the trash to designated areas (US). These figures, however, should be validated by testing. Table 3 depicts an example of CSF identification and documentation.

Determining CSF

Building Name: _____
Floor: _____
Gross SF: _____

Rm No.	Designated Use	Size, Ft.	SF	Fixture Count
101	Women's Locker room	10x10	100	
202	Restroom	9x9	91	5
303	Office	8x8	64	
404	Work Floor	25x25	625	
505	Dock	10x25	250	
Fixture Count				5
Net CSF			1,130	

Table 3 – Determining Cleanable Surface

2. Identify the tasks in each quadrant. Breakdown the tasks into three types (daily, detail, and project) and determine the frequency for each job, see Table 4.

Task Identification

Building Name: _____

Floor: _____

Quadrant: _____

Task/Quad 1	Task Type	Frequency
Vacuum work floor	Routine	260
Scrub/Dry work floor	Detail	52
Strip work floor	Project	4
Remove trash/replace soiled liners	Routine	260
Dust map with 48" mop	Routine	260
Dust horizontal surfaces	Routine	104

Table 4 – Task Identification and frequency

3. Workloading: Compile a workloading chart, such as Tables 5 and 6, for the identified cleanable tasks by quadrants and by specialists. For each identified task, allocate the amount of time (task time) to complete it, including non-surface items (use ISSA 447). ISSA lists general team cleaning times, such as depicted in Table 7. However, it is more accurate to perform each task to determine the actual task time (TT). Test each task with at least three different cleaners; document the time required to complete the task for each cleaner. The average completion time for a given task is the task time for that task. For example, three different vacuum specialists (VS) vacuum Quad 1; the first specialist takes 20 minutes, the second 25 minutes, and the third 30 minutes. Task time is {(20 + 25 + 30)/3 =} 25 minutes. Use the task frequencies (TF) from Table 4 for the number of times a task will be performed. Calculate the annual time (AT) for each task by multiplying task time (TT) by task frequency (TF); add all ATs to determine required specialist yearly person-hours in the quadrant; see Tables 5, and 6. Balance the required time for each quadrant; this may require reconfiguring quadrants.

Note that cleaning time plus break and lunch periods should not exceed the 8 hours per shift for FTE or the 4 hours per shift for PTE.

Workloading

Building Name: _____
Floor: _____
Quadrant _____

Routine Work Floor Tasks/Quad 1 Vacuum Specialist	Task Freq. (TF)	CSF (Ft^2)	Task Time (TT) (Min)	Annual Time (AT) TF x TT (Hr)[1]	Prod. Rate (PR) CSF/TT (Ft^2/Hr)[1]
Vacuum work floor	260	15,000	25	108	36,000
Vacuum horizontal cabinet surfaces	52	5,000	10	9	30,000
Total Hours per Year				**117**	

Table 5 – VS Workloading Chart

Workloading

Building Name: _____
Floor: _____
Quadrant _____

Routine Work Floor Tasks/Quad 1 Vacuum Specialist	Task Freq. (TF)	CSF (Ft^2)	Task Time (TT) (Min)	Annual Time (AT) TF x TT (Hr)[1]	Prod. Rate (PR) CSF/TT (Ft^2/Hr)[1]
Empties trash/recycling bins	260	15,000	10	43	90,000
Dust all items below 5 feet high	52	15,000	15	13	60,000
Clean phones	260	15,000	10	43	90,000
Spot clean horizontal/vertical surf.	260	15,000	5	22	180,000
Total Hours per Year				**121**	

Table 6 – LDS Workloading Chart

[1] One hour equals 60 minutes. Therefore to convert from minutes to hour, divide by 60.

Production rate is the amount of time it takes to perform a given task or the number of tasks that can be performed in a given time. It is the CSF divided by TT or

PR = CSF/TT

The following is an example of the Production Rate calculation for "Vacuum work floor" for Quad 1, row 1, Table 5 above. CSF is 15,000 Ft^2, and TT is 25 Min. Note that to convert from minutes to hours, we multiply the result of PR by 60 Min/Hr.

$$PR = \frac{15{,}000\ Ft^2}{25\ Min} = 600\ \frac{Ft^2}{Min} \times \frac{60\ Min}{Hr} = 36{,}000\ \frac{Ft^2}{Hr}$$

If the Production Rate (PR) is known, then Task Time (TT) is:

TT = CSF/PR

$$TT = \frac{15{,}000\ Ft^2}{36{,}000\ \frac{Ft^2}{Hr} \times \frac{Hr}{60\ Min}} = 25\ Min$$

	TEAM CLEANING	Sq. Ft.	Minutes	Sq. Ft. Hr
437	Light duty Specialist office building cleaning	1,000	6.00	10,000
438	Vacuum Specialist office building	1,000	6.00	10,000
439	Restroom Specialist office building during training-each fixture	-	2.00	-
440	Restroom Specialist office building after training-each fixture	-	1.50	-
441	Light Duty Specialist school cleaning w/o sinks in the classroom-each fixture	-	4.50	-
442	Light Duty Specialist school cleaning with sinks in the classroom-each fixture	-	5.75	-
443	Vacuum specialist school cleaning-each room	-	7.50	-
444	Restroom Specialist school cleaning during training-each fixture	-	3.00	-
445	Restroom Specialist school cleaning after training-each fixture	-	2.00	-
446	Check-in and travel to area, beginning of shift	-	2.00	-
447	Equipment cleanup and restock, end of shift	-	5.00	-

Table 7 – ISSA 447 Cleaning Times for Team Cleaning

Workloading for restrooms is different; it is based on fixtures, see Table 8. Therefore, workloading restrooms involve accounting for the number of fixtures, such as sinks, toilets, and urinals, and using 2.5 minutes per fixture. The productivity rate for each fixture includes all tasks.

Routine Restrooms Tasks/Quad 1 Restroom Specialist	Cleaning Freq.	CSF (Ft^2)	Task Time (TT) (Min)	Annual Time (AT) TT x Freq. (Hr)	Prod. Rate (PR) CSF/TT (Ft^2/Hr)
Remove all trash/replace liners	260				
Dust mop	260	(Based on fixture count. To obtain the productivity rate			
Dust all horizontal surfaces w/dusters	260				

Clean/disinfect toilets, urinals & sinks	260	multiply the number of fixtures by 2.5 minutes and divide by 60 minutes to convert to hours)			
Fill soap/lotion/paper/cup/dispensers	260				
Spot clean w/disinfectant doors/walls	260				
Wipe mirrors	260	80			
Damp mop w/disinfectant	260				
Scrub ceramic tile floor	12	3600	30	52	7,200
Total Hours per Year					

Table 8 – RS Workloading Chart

The aggregate specialist time within a quadrant should include break and lunch periods, see Table 9.

Floor	Quad	Time		Task Time (Minutes)	Notes
		In	Out		
1	1	6:15PM	6:50PM	50	6:00-6:15PM Stairs/Routine
2	2	6:50PM	7:30PM	40	Routine
Break		7:30PM	7:45PM	15	Break
3	3	7:45PM	8:25PM	40	Routine
4	4	8:25PM	10:00PM	95	Detail Quad 4
Total				240	4 Hrs

Table 9 – Quad PTE Schedule

Use the Staffing Hours Summary Sheet, Table 10, to input the annual hours from the Workloading Charts for Quads 1, 2, 3, 4, restroom, and utility duties. The total annual hours will determine specialist staffing levels.

Floor Area	Total Annual Hours
Quad 1	
Quad 2	
Quad 3	
Quad 4	
Restrooms	
Utility	
Total Hours	

Table 10 – Annual Hours

Use Table 11 to determine the staffing labor cost. Actual total cleaning cost, however, should include labor overhead (LOH), material, and material overhead (MOH) costs, see Table 12.

Specialist Labor Cost

Position	Hours per Year	Pay Rate	Labor Cost
Utility Specialist			
Vacuum Specialist			
Restroom Specialist			
Utility Specialist			
Total			

Table 11 – Staffing Cost

Class	Labor Cost	Labor OH	Mat' l Cost	MOH	Contract Cost	Total Cost
LDS						
VS						
RS						
US						
Total						

Table 12 – True Cleaning Cost

The elements of cost

Cost accounting determines the elements of costs in the production of goods and services (DeGarmo & Canada, 1973). Understanding the features that make up exact cleaning costs makes it possible to monitor and manage them more wisely. The details of costs are direct labor and material, overheads, and contract costs. Materials and labor used directly in producing goods or services are called direct. According to DeGarmo and Canada, direct costs should be readily measurable. For example, cleaners' wages and materials used to perform specific cleaning tasks are directly known and measurable. Indirect costs, on the other hand, are not readily quantifiable and, therefore, should be charged to overheads. For example, the exact amount of cleaning solutions allocated to a given area would be challenging to determine.

Likewise, the salaries of supervisors and managers are part of indirect labor and hence should be charged to overhead. Of course, there are other indirect costs incurred in producing custodial services, such as employees' benefits, supporting departments, storage areas and equipment, inventory carrying costs, and so on. It is essential to allocate direct and indirect costs properly. The contract cost is identifiable but often not accurately documented or tracked; they include services provided by outside contractors and some material purchases. The inability to identify all cleaning costs will lead to improper managerial decision-making.

Standardization and employee involvement

Standardization is a critical team cleaning strategy; one of team cleaning goals is to standardize the entire process. Employee involvement in determining standard procedures and tools enhances efficiency, acceptability of the initiative, and facilitates continuous improvement. For example, employees can contribute to the development of job cards, routes, determining task time, equipment selection and testing, training, fine-tuning the process, and so on. A cross-functional Cleaning for Health Committee will facilitate employee involvement in every aspect of the initiative, as well as the interaction between management and staff. For example, the committee could review the germicidal product with the manufacturer's representative for restroom and

lunchroom disinfection, as well as new restroom cleaning procedures and tools and best methods of selecting and testing solutions, tools/equipment, etc.

Job cards

The job card, carried with the specialist throughout the shift, tells each cleaning specialist the location of the cleaning area, quadrant entrance and exit time, and cleaning tasks to be completed. The job card can differentiate day routes from evening routes.

Additionally, it could list detailed instructions, such as the time allotted per task. Thus, supervisors can quickly assess specialists' progress through different quadrants and make appropriate adjustments. Management should develop job cards with inputs from specialists. Once the card is developed and functional, it is laminated and given to the specialists.

Metrics, communication, and improvements

Neely, Gregory, and Platts (1995) noted that performance measurements are often discussed but seldom defined. For them, it is a process of quantifying action that leads to performance. The steps quantified are those that lead to satisfying customers' requirements with greater efficiency and effectiveness than competitors. Defining measurable customer requirements enables management to set goals, determine progress, and the need for improvement. Team cleaning tasks are simple, clearly documented on job cards, and easily measurable. We can define them in terms of quality, delivery speed, delivery reliability, cost, and flexibility (Neely et al.). Thus, by framing managerial responsibility and accountability in a balanced scorecard, the organization can, if it chooses, influence managerial and staff performance. Neely et al. noted that we could reinforce employee behaviors by using rewards or sanctions.

Kaplan and Norton developed the balanced scorecard, based on the principle that performance measurement systems should address the following perspectives: customer, internal business (processes), financial, innovation and learning. Team cleaning addresses all four perspectives; thus, it is suitable for measurement.

Team cleaning requires unambiguous communication between specialists, management, and customers. A job card is a communication tool that embodies the expectations of internal and external customers; therefore, it should be simple, precise, easy to understand, and durable. Team cleaning also requires frequent managerial interaction with occupants and staff; communication allows for training, coaching, and staying abreast with current challenges and opportunities. Interaction provides management with the opportunity to emphasize that everyone in the organization is responsible for maintaining a clean environment and that a clean environment enhances occupants' health and safety.

Management should also consider using specialists to introduce the cleaning team concepts to their peers and customers.

Selecting the pilot team

Clearly describe the functions of each team cleaning specialist and the role they expect to perform. Describe the job card, its construction, and its purpose (i.e., standardization, repeatability, tractability, etc.). Describe the backpack, which is the principal tool of the vacuum specialist; explain the weight of the device, noise level, heat generation, possible initial discomfort, and so on. Describe the advantages of pre-packaged cleaning solutions (i.e., limited employee exposure to chemicals, reduces the number of chemicals used, and are color-coded for easy identification, etc.).

Team cleaning has four significant positions called specialists. Specialists must be healthy, capable of physical activity, and with an eye for details. The positions, duties, and tools of specialists are:

- The light-duty specialist (LDS): The LDS tools are a large trash barrel on wheels with an accessory apron, labeled bottle with an all-purpose cleaner, distribution tray, and proper personal protection equipment (PPE). The LDS empties trash and recycle bins, dust, cleans telephones, and spot cleans horizontal and vertical surfaces.
- The vacuum specialist (VS): The VS tool is the super coach backpack from ProTeam with four filtration systems and PPE. The VS checks the trash, vacuums floors/high traffic areas, turns the lights off, and secures the area. See Appendix A for a typical flow chart.
- The restroom specialist (RS): The RS tools are restroom cart, smart mop system with microfiber, acid applicator, disinfectant applicator, wet floor sign, stock solution bottle, pack cutter, distribution tray, point of use mixing hose, cleaning cloths, disinfectant spray bottle with proper label, and PPE. The RS fills dispensers, empties restroom garbage, cleans and disinfects fixtures and floors, cleans mirrors, and drinking fountains.
- The utility specialist (US): The US often is the working lead supervisor. The US tools are floor buffer, carpet extractor, large trash collection bin on wheels, auto scrubber, as well of tools of the other specialists. The US hauls out the trash to the dumpster, cleans brass, blinds, and carpet, mops entry tile, handles light maintenance, and other specialty services, see Appendix B.

NOTE: When the crew is one person short, the vacuum specialist can be used to fill the vacancy, or the crew can alternate duties after their regular duties. If the vacancy is for two or more days, the utility specialist can fill the vacancy.

Training

Training is a critical component of team cleaning; it is the foundation of quality control. Train specialists to perform more than one function using standardized procedures that follow a specific routine designed to maximize efficiency and quality, as well as repeatability and consistency of the cleaning process. Identify the two or more vulnerable cleaning areas, the worse cleaning areas in the facility, and concentrate training and tools/equipment to improve these areas.

Introduce and train restroom specialists and other cleaning team members to portion packaging systems for mixing perfect cleaning solutions. Controlled packages reduce waste and guesswork; specialists carry the packages they need to avoid wasting time returning to the supply closet.

Equipment

Tables 13 through 16, list potential team cleaning tools and equipment. The lists are provided only as a guide and should be modified to fit the specific needs of the given area.

Equipment for Team Cleaning

Light Duty Specialist Description	Qty	Cost	Total Cost
Large trash barrel on wheels with accessory apron			
Trash can liners			
All-purpose cleaner/PortionPac			
Trigger spray bottles			
Cloth towels			
Pro-Duster dust tool			
Can of graffiti remover			
Notepad with a pencil			
Job card, laminated			
MSDS for all chemicals			
Keys			
Personal protective equipment			

Table 13 – Potential Equipment for LDS

Equipment for Team Cleaning

Vacuum Specialist Description	Qty	Cost	Total Cost
Super Coach Backpack vacuum w/four filtration system (ProTeam)			
Vacuum bag filters			
Vacuum attachments			
Trash can liners, small			
Notepad with a pencil			
Job card, laminated			
Caution sign for an electric cord			
Keys Personal protective equipment			

Table 14 - Potential Equipment for VS

Equipment for Team Cleaning

Restroom Specialist Description	Qty	Cost	Total Cost
Restroom cart			
Mop bucket mounted on cart/microfiber flat mop			
24" dust mop			
Broom, small			
Dustpan			
Glass cleaner			
Stainless steel cleaner			
Germicidal detergent (PortionPac)			
Trash can liners			
Wet floor sign			
Disinfectant applicator			
Cleaning cloths			
Notepad with a pencil			
Job card, laminated			
Keys Personal protective equipment			

Table 15 - Potential Equipment for RS

Equipment for Team Cleaning

Utility Specialist Description	Qty	Cost	Total Cost
High-speed floor machine with pads			
Buffer with bonnets			
Super Coach Backpack vacuum w/four filtration system (ProTeam)			
Vacuum bag filters			
Vacuum attachments			
Trash can liners, large			
Carpet and upholstery spotting kit			
Stainless steel polish			
Broom			
Brushes			
Dust mop			
Wet mop and bucket			
Towels-dust cloth			
Chemicals (PortionPac)			
Trash collection bin on wheels			
Notepad with a pencil			
Job card, laminated			
Caution sign for an electric cord			
Keys			
Personal protective equipment			

Table 16 - Potential Equipment for RS

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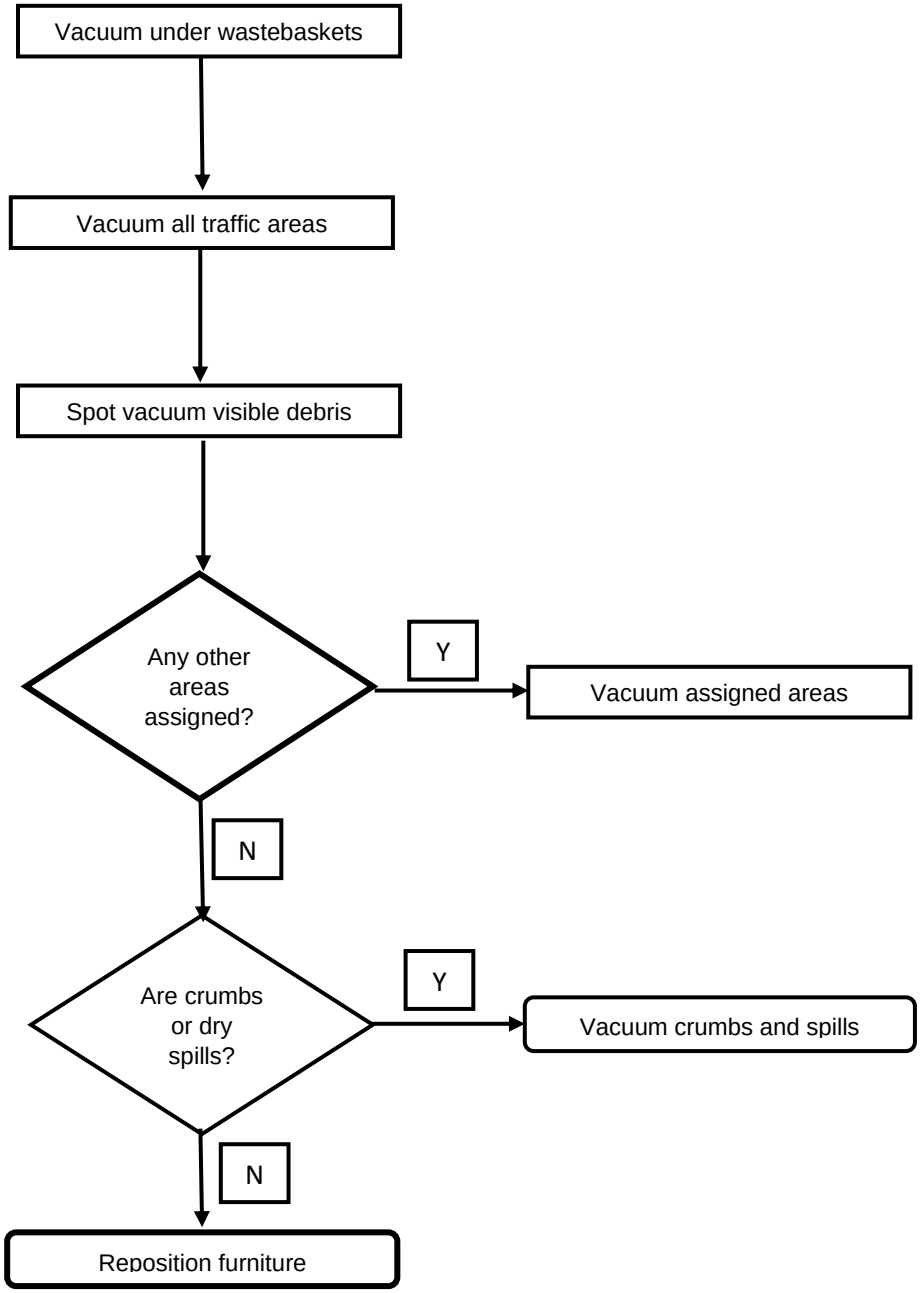
Appendix A

Vacuum Specialist Flow Chart



Appendix B

Utility Specialist Flow Chart