Using Risk Assessment Codes to Rank Order Facility Projects[1]

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ABSTRACT

It is the author's experience that facility professionals do not get all the resources they need to perform preventive maintenance, as well as facility improvement projects. This often results in a backlog of work. There is a way that facility professionals can rank order facility improvement projects so that the most important ones are presented to management with a better chance of approval. This is done by identifying the risks associated with each project and recommended those with the highest risk. After high-risk projects effort can be placed on medium risk and then low risk. Usually resources run out before all medium risks are done, but using this method will ensure high-risk projects are done. In this paper, the author explains a process he has used for over twenty years with very good success that can be easily explained to budget staff and senior leaders.

INTRODUCTION

"Facility professionals typically are responsible for the oversight, operation, and maintenance of the buildings and grounds, as well as service contracts" (Finance, 2013). Facility maintenance consists of preventive maintenance, planned and unplanned replacement maintenance, planned minor works, breakdown maintenance, and unplanned property services. The author will refer to all the maintenance except preventive maintenance as facility improvement projects. Facilities maintenance normally requires a 2-4 percent of the building replacement cost be reinvested each year in maintenance to keep the facility fully operational. Unfortunately, most facilities reinvest less than 2 percent of the building replacement cost, which creates a backlog of maintenance that grows each year (Predicting, 2012). Preventive maintenance costs run the same each year with an increase for inflation; however, many of the facility improvement projects have a high one-time cost and are known as capital projects (Operations, 2013). These capital projects are required to compete with other projects outside of facilities but within the organization. It is essential that all projects are competitive. Facility professional often think some funded projects do not seem as important as facility projects that were not funded.

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Capital projects compete against each other and those that make the best case are funded. To get their projects funded facility professionals must submit the best project packages they can. These packages must provide a clear description of the project, its cost in current and future dollars, and justification for funding. Putting the best packages forward gives the facility projects a better chance of being funded. Unfortunately, the reality is that many facility professionals are never taught how to prepare project packages and that results in facility packages not getting funded.

The author is a trained and certified facility professional. Over the years, he has developed a process that leads to effective project packages that get funded. One of the essential elements of any project package is a clear description of any safety risks posed by the work of the project. Projects with a safety risk should be funded before projects that don't have any risk to them. Facility professionals must be able to identify projects that have a safety risk and rank order them so that the most dangerous projects are funded first. It is essential for a facility professional to have a complete list of all capital work that needs to be done. From this list, each project must be analyzed to determine the hazard of injury, illnesses, or environmental damage. The results of this analysis will be provided on the list of facility projects.

RISK ASSESSMENT CODE

Risk Management is a five-step process used to identify and assess hazards as well as controlling or eliminating them. There are five steps in the basic risk management process:

- Step 1-Identify Hazards
- Step 2-Assess Hazards
- Step 3-Develop Controls and Make Decisions
- Step 4-Implement Controls
- Step 5-Supervise and Evaluate

Steps 1 and 2 describe the risk assessment process. Hazards are assessed in terms of hazard severity and probability and assigned a risk assessment code (RAC). Hazards should be corrected on a worst first basis using the RAC to determine the risk (Fanning, 2003).

To determine the RAC, the facility professional would first identify the hazard severity category, as described in Table 1 below. Each level of severity is identified by a category, a description, and a definition of the result of being exposed to the risk. The best practice is to pick the most common severity category that might occur and not use a worst or best-case description.

Category: I **Description:** Catastrophic **Definition:** Loss of ability to accomplish the duties or failure of duties by organization. Death or permanent total disability of a person. Loss of equipment or major damage to environmental.
Category: II **Description:** Critical **Definition:** Significantly (severely) degraded capability to conduct duties of organization. Permanent partial disability, temporary total disability exceeding three months. Major damage to equipment or environmental.
Category: III **Description:** Marginal **Definition:** Degraded capability of organization to perform duties. Lost day due to injury or illness not exceeding three months. Minor damage to equipment or environment.
Category: IV **Description:** Negligible **Definition:** Little or no adverse impact organization to perform duties. First aid or minor medical treatment. Slight damage to equipment or environment.

Table 1, Hazard Severity Categories
(adapted from U.S. Army Field Manual 100-14)

After determining the hazard severity category the facility professional must determine the probability category using the definitions in Table 2 on the next page. The best practice is to pick the most common severity category that might occur and not use a worst or best-case description.

After determining the severity and probability categories the facility professional can determine the risk assessment code by using Table 3 on the page 5. Take the hazard severity category from table 1 (I, II, III, and IV), put a finger on it in the left column of Table 3. Run that finger across the row until it is in the column of the probability level (A, B, C, D, E) that finger is on the number compares severity and probability.

As an example if the hazard severity category was a II and the probability category was B the number would be 2. The RAC would be II-B-2.

This RAC means that an accident from this hazard could cause a critical situation that could significantly degrade the organization's ability to conduct or perform its mission. The result could be a permanent partial disability, temporary total disability of a person that exceed three months' time away from work. The result could also be major damage to equipment or systems. This event is likely to occur several times in an operation or during the service life of a piece of equipment. The result may occur at a high rate, but experienced intermittently with regular intervals, and generally often. An employee could experience the event several times in a career. Exposure to all the employees of an organization is at high rate but experienced intermittently.

Level: A **Probability:** Frequent, occurs very often, continuously experienced **Single item:** Occurs very often in service life of equipment. **Fleet or inventory of items:** Occurs continuously during a specific operation or over a service life. **Individual employee:** Occurs very often in a career. **All employees exposed:** Occurs continuously during a specific operation.
Level: B **Probability:** Likely, occurs several times **Single item:** Occurs several times in service life of equipment. **Fleet or inventory of items:** Occurs at a high rate, but experienced intermittently. **Individual employee:** Occurs several times in career. **All employees exposed:** Occurs at a high rate but experienced intermittently.
Level: C **Probability:** Occasional, occurs sporadically **Single item:** Occurs some time in service life of equipment. **Fleet or inventory of items:** Occurs several times in specific operation or over a service life. **Individual employee:** Occurs some time in career. **All employees exposed:** Occurs sporadically.
Level: D **Probability:** Seldom, remotely possible, could occur at some time. **Single item:** Occurs in service life of equipment, but only remotely possible **Fleet or inventory of items:** Occurs as isolated incident in a specific operation or sometime in service life, but usually does not occur. **Individual employee:** Occurs as isolated incident during a career. **All employees exposed:** Occurs rarely within exposed population as isolated incidents.
Level: E **Probability:** Unlikely. Can assume will not occur, but not impossible. **Single item:** Occurrence not impossible, but can assume will almost never occur **Fleet or inventory of items:** Occurs very rarely (almost never or improbable) in a specific operation or the service life. **Individual employee:** Occurrence not impossible, but may assume will not occur in career. **All employees exposed:** Occurs very rarely, but not impossible.

Table 2, Accident Probability Category
(adapted from U.S. Army Field Manual 100-14)

	Accident Probability				
Hazard Severity	**A**	**B**	**C**	**D**	**E**
I	**1**	**1**	**2**	**3**	**5**
II	**1**	**2**	**3**	**4**	**5**
III	**2**	**3**	**4**	**5**	**5**
IV	**3**	**4**	**5**	**5**	**5**

Table 3, Risk Assessment Code Matrix
(adapted from U.S. Army Field Manual 100-14)

PRIORITIZING WORK

The definition of the RAC is included in each project package sent to the budget staff and management for consideration. The definition of the RAC is the justification of why the project must be done.

When a justification says "could cause a critical situation that could significantly degrade the organization's ability to conduct or perform its mission" people respond to that. Just as the response to "could result in a permanent partial disability, temporary total disability of a person that exceed 3 months' time away from work" will get people's attention. That is why the author recommends the best practice of picking the most common severity category that might occur and not using a worst or best-case description. Using a worst-case description will look like the facility professional is exaggerating the risk. If budget staff and management think the risk is exaggerated, they won't consider it fairly. Using a best-case description will probably not convince anyone to fund the project, and if the risk comes to fruition the facility professional will look foolish.

The work that is not funded in one year should be updated and referred again the following year. The author has experienced that some projects must be referred for funding three or four times to get approved. In many cases, as high-risk projects are worked off the list others can rise in importance. For the projects that do not receive funding the risk being lower means that if it comes to fruition less damage will be done.

SUMMARY

Not all facility maintenance projects are equal. It is important to recognize that the funding provided for such projects is never fully realized. This means not all projects will get done requiring the facility professional to find a process to ensure that the projects with safety risk are identified. This is best done with a risk assessment code. This code allows facility professionals to rank order projects based on a comparison of severity and probability. The description of the

risk assessment code is included in the justification for the project improving the chances of it being funded. When the justification includes the risk the project poses to the organization it will garner more attention. This attention is what the author believes will help get the project funded. The author has used this process successfully for over twenty years and believes it will work for others.

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About the Author

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Fred E. Fanning, CFM, PMP, LEED-Green Associate, is retired from the US Government where he served as a program and project manager. He is also an independent author. Fred is the author of *Basic Safety Administration-A Handbook for the New Safety Specialist*. He authored the chapter *Safety Training and Documentation Principles* that was published in the best-selling *Safety Professional Handbook* and in *Hazard Prevention through Effective Safety and Health Training*. He also authored the chapter *Safety Training* that was published in the best-selling Construction Safety Management and Engineering. Fred's book and all three chapters were peer reviewed and published by the American Society of Safety Engineers. Fred has authored several other books and over 40 technical articles. Fred has presented several papers before national audiences. He earned a bachelor's degree from Excelsior College and master's degrees from National-Louis University and Webster University.

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