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Counting the Costs

(Of Poor Asset Management)

Why does your CFO resist your maintenance budget requests?

David Geaslin has an idea that may just be useful for you. He argues that senior management understate the costs of future breakdown events. He says that when 'run to failure', costs can be a min of 15 to a maximum of 40 times the cost of maintaining/renewing at the appropriate time.

See "Geaslin's Inverse-Square Rule for Deferred Maintenance" on page 944

Is he right? - Well, consider what the real – inclusive - costs of breakdown are. See page 945

Then on page 946 we introduce the second of our presenters in the "15 minutes of Fame" gallery – Rob Didcoe, Manager, Facilities Development, Department of Sport & Recreation, Western Australia

And, since Rob tells me that 2005 is the International Year of Recreation and Sport – I thought that a few international messages would be in order, so see p 948..

And now for a TEST

You probably know Edison and Ford, but who invented the integrated circuit?

This invention has underpinned the silicon chip and with it the great changes in work and life styles that we have seen over the last thirty years.—cell phones, microwave ovens and laptop computers.

But who was he?

Answer: Back Page

Enjoy

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GEASLIN'S "INVERSE-SQUARE RULE FOR DEFERRED MAINTENANCE"

What Senior Management Believe

"Those of us who have had many years of direct experience in managing maintenance have tried to tell them [senior management] that the penalty is significantly more than that. [Twice as much] I, personally, felt that the cost of deferring maintenance was three to four times as much as a timely repair.

What I discovered in my research is that the penalty for deferring maintenance is not more, not twice as much, not four times as much, but that

> the real penalty for deferring maintenance that becomes a breakdown event is 15:1 minimum, and often exceeds 40:1!

I attempted to find a metric that would explain the before-and-after breakdown cost difference: I had to go to an exponential factor! I created a rule that I call Geaslin's "Inverse-Square Rule for Deferred Maintenance." This rule states:

The Inverse-Square Rule for Deferred Maintenance

"If a part is known to be failing and the repair is deferred and allowed to remain in service until the next level of failure, the resultant expense will be the square of the failed part."

This is why a $40 brake shoe left in service (until the brake shoe rivets damage the brake drum, the drum ruins the core value of the shoes, the truck breaks down on the road, a second truck and driver has to be dispatched, the load transferred, and one driver dead, head back with the tow truck) results in an expense of the square of $40 ($40 X $40=$1,600) and becomes $1,600. If the brake problem causes a personal injury accident, the cost can be easily squared again to $2.5 million.

This rule explains how a leaking $50 toilet valve, if left in service until it overflows, can easily cost the square of $50 to create a total flood damage cost of $2,500 in carpet, pad, electrical, and document destruction.

This is why a failing industrial electric motor bearing valued at $100 can create a $10,000 repair if left in service until failure, and the rotor wipes out the windings and damages the stator.

This rule explains how deferring a $1,000 cleaning of a heat exchanger can easily create a $1 million expense in corrupted product, re-refining, packaging, and shipping costs. "

Calculate it for Yourself!

Geaslin says take the last event resulting from undone maintenance "add in all the collateral damages such as idled worker salaries, quality control events, ruined materials, customer dissatisfaction, and lost production or profits, and put that number in their calculator; and click the SQRT (square-root) button". Now see how close that comes to the cost of repairing the part when it was originally due!

If you would care to know more about this rule and Geasling's other discoveries, more detail is available on his website at www.ManagingMaintenance.com.

I found the reference to this article on the NEWEA Asset Management Committee's "Asset Management Resource Center (AMRC)", A clearinghouse of asset management best practices information. Well organised and lots of interesting information. www.newea.org/AMRC

WHAT DOES POOR ASSET MANAGEMENT LEADING TO A BREAKDOWN REALLY COST?

Direct Costs to Agency

- Emergency response
- Repair and return to service - Note: Emergency repair costs more than programmed repair when it is possible to
  - plan the job in advance
  - schedule jobs and co-ordinate schedules with operations
  - arrange for parts to be ready
  - co-ordinate availability of tools, rental equipment, etc.
- Service outage mitigation
- Security and Public safety
- Damage entitlements— administrative and legal costs
- Costs of lost product, service, or revenues

Indirect Costs to Agency

- Loss of public credibility and reputation
- Media attention and the time taken to deal with it
- Increased public and political scrutiny
- Loss of licence or imposition of higher standards

(see Issue 152 October 29 2004 on Reputation Risk)

Direct Customer Costs

- Service outage (e.g. missed opportunities, loss of business revenue)
- Service outage mitigation and substitution
- Access impairment and travel delay
- Property damage costs (including restoration of business)
- Health damages

Community Costs

- Emotional strain/welfare
- Environmental pollution, erosion, sedimentation
- Destruction of/ damage to habitat
- "Attractability" (tourist, economic)

Personal Costs to the Asset Manager!

Difficulties of dealing with a disenchanted public! Feelings of inadequacy! Evening and weekend call-outs! Fire fighting rather than strategic asset management! Lack of confidence in decision making! Lack of confidence generally! Exhaustion! Burn-out!

Disseminating good practice is what SAM is all about.
This week in our "15 Minutes of Fame" gallery we feature

Rob Didcoe

Manager, Facilities Development
Department of Sport & Recreation
Western Australia

We asked Rob to give us "three key messages' that he has learnt from his work in asset management in the Sports and Recreation area.

They are:

1. Question everything
2. Understand what your clients know—and don't know
3. Take a cross-government perspective

Rob writes ...

Your thinking creates your reality and yet we typically have 95% of the same thoughts every day!

Why is that and What are you going to do about it?

When you join a new organisation you often have a perception that certain things *must* be a given or that certain information *just has* to be available. How else, you ask, could the organisation being doing its' business effectively? *But on many occasions it is not, or at least not as effectively as it could be.*

1. Question Everything

Just because the organisation has a process or a methodology, don't assume that it is the right one. Look for an Evidenced Based Decision making system and make sure it is based on the right evidence.

When I joined my current employer I assumed that because I was working with local government and sports on facility planning and providing grants to develop or redevelop sport and recreation facilities then we must have a pretty accurate handle on the what, why and wherefore of what existed, what condition it was in, whether it still serviced the needs of the community, if it would continue to do so and if so for how long. Unfortunately this was not the case. Many local governments and sports did not know either, in fact, many did not even have an accurate asset register. When it came to the sports, none of them had a strategic facilities plan. Instead, requests for infrastructure provision were made on an ad-hoc basis to local and state governments along the lines of "We need it now because people want to play our sport".

As could be expected, the level of asset management by some was quite poor and the real debt being reported was less than it should have been. Further, the State had no real quality data on what sport and recreation facilities existed, how they were distributed or how they performed. There was little understanding of whether the grant programs were achieving their aims or just creating a bigger problem. Duplication and over-provision are not uncommon issues with a consequent impact that the facilities do not perform well financially.

We went through the post-war period creating madly and now the chickens are coming home to roost. Faced with new land use planning or financial policy requiring justification of facilities, it was difficult to argue effectively for either increased funding or a change to funding program parameters.

We are currently tackling this issue in two ways: through a facilities mapping project and through strategic facilities plans for high infrastructure-using sports (as identified by local governments).

Much of the data we need for our mapping project exists, either in other government agencies or in local governments. What we are doing is bringing this together in a form that all users, at various levels, will be able to access for planning and decision making purposes. A consequent need is understanding what other agencies are doing in similar projects, like the Health department mapping epidemiology. Once we overlay their data onto our maps we will be able to more clearly see whether a lack of certain facilities is a contributing agent and thus use our funding programs to target those areas.

In the sports planning studies we are forcing the sports to look at the key questions raised above, to identify a hierarchy of facility need and to consider what the impacts of new planning policies on inner city urban regeneration will be on their sport.

We are also forcing them to predict their needs in 5-10 years time in new developments on the urban fringe.

2. Understand the capability of those you service and plan to improve it

In SAM 168 Penny made the observation that "Capability is not evenly distributed" and I thought there must be some telepathy going on because our experience is the same and I was planning to write about that too. In order to develop the systems and processes required to create improvements in asset planning and management it is imperative to understand your market.

In the sport and recreation area we service local government, state sporting associations, sub-associations down to clubs when looking at funding projects or advising on facility management issues. Whilst there are some outstanding people within this sector there is also a large gap in the knowledge of those 144 local governments and 90 state sporting associations without even getting down to club level. So, survey your clients to see what they know, or think they know. Look at their facilities and form an opinion on what they have told you. Once you have an idea of the gaps in the market's knowledge and have prioritised their importance, develop partnerships with professional organisations, education providers and consultants to address those gaps over a period of time.

We have done the above but must continue to do so and to develop new partnerships. Of course, if you don't know what you don't know then you need someone who can lead you on the path of enlightenment. This a prime reason that ACORN exists.

3. The Cross-Government perspective

One of the things I have found in being a public servant is that many of my colleagues are not interested in what other agencies are doing, how it impacts on their own programs and services, what policy is being developed that may be detrimental or supportive of their operations and whether the community would be better served by a more holistic approach. Sometimes it is true that this occurs because we all busy.

It is imperative that public servants adopt a wider view of government operations and it must become an intrinsic part of your daily ethos. If you do not know or understand what others are doing or how it will affect you it is impossible to influence the outcome to suit your needs. Okay, even when working at the front end it does not always mean you will get what you want but I know which end of the process I'd rather be tackling issues from.

From a sport and recreation perspective I found that we had a minimal relationship with our planning department despite the significant role that sport and recreation plays in communities around Australia. This was a result of the approach by both agencies in the past. Whether it is access to national parks for Trails, access to land for local, regional/district and state level sporting facilities in the right locations at the right times or understanding the impact of increased and ageing populations on sport and recreation infrastructure it is critical that planners are engaged.

This is true of many other agencies as well, whether is education (facility sharing to reduce duplication), health (improve health outcomes through better facilities), Heritage (preserving the heritage aspects associated with your business) or Environment (just about anything) take the time to develop relationships with your colleagues across government.

The expertise that you and your organisation hold can often improve the wider cross government and hence community outcome if they know about it. Don't be shy to engage and tell people what you know.

2005 IS THE YEAR OF INTERNATIONAL SPORT AND RECREATION

In Recognition, we bring you some international sport and recreation messages!

These excerpts are from a large Public Use Facilities Study commissioned by the City of Winnipeg in 2004 and you may find it in its entirety at http://www.winnipeg.ca/interhom/pdfs/pufs/)

Leadership Role The City must define its leadership role in the provision of recreation, leisure and library infrastructure. This infrastructure is a key element in establishing a sense of place, a sense of community. Amenities and lifestyle opportunities contribute significantly to the quality of life of a City. In many cases they are seen as entitlements by its' citizens as they've agreed to support this infrastructure through the tax base.

Decision Framework A comprehensive decision framework is required in order to assess the viability of proposals. Without an overall strategy and plan, it is difficult if not impossible to assess the viability of the many "one-of" proposals that are received. The only alternative is to assess the proposals from parochial perspective, an approach is often the target of criticism. As a result, the distribution of capital dollars at a neighbourhood level appears to be somewhat haphazard, creating a "What about us?" sentiment in adjoining neighbourhoods.

Problems Increasing Over Time It is understood that the infrastructure problem will amplify and intensify over time. As facilities deteriorate, there will be a noticeable lessening of the quality of life in the community. Deterioration of facilities leads to disrespect. However, it is also acknowledged that continued investment into facilities that no longer meet the needs of the public is a classic case of diminishing returns.

The 1960s Model is No Longer Appropriate We can no longer sustain a planning model for this infrastructure that dates back to the 1960's. We must recognize and address the changes in demographics, family dynamics, a reduction in volunteerism, a decreased emphasis on competitive sports, and people's expectations. The construction of inter-generational, multi-use facilities that address some of these concerns is a high priority.

If you can't afford to maintain it – Don't build it! Legacy facilities have taught us that contribution to capital only by other levels of government without a corresponding commitment to continued operations is not sustainable. Don't build it if you can't afford to maintain it.

Do it quickly! The public will be sceptical of any plan that has an initial focus only rationalization. It is essential to show quick and positive results relative to the proposed changes. If there's going to be pain, we need a painkiller. In the same breath, we must be careful not to overreach the rhetoric. We must do what we say we are going to do in a relatively short time frame. Keeping the public fully informed is key when it involves any change to this infrastructure.

Have a Roll-Out Plan The Public Use Facilities Study must be an action plan, not just another report. An effective roll-out plan will be essential to its success.

REDUCE COSTS BY THINKING BIG

Take the responsibility – or take the consequences!

As asset managers we can influence only the costs that our agency directly or indirectly incurs.

As a member of the community, however, - and knowing what we know as asset managers – we can potentially influence much, much more!

Consider this, most of our unwise community asset decisions are made at the top! And the higher we go the more potentially costly the decision. There is a reason for this, of course: the higher the level, the greater the funding available to the decision maker. But also the more divorced from a general understanding of the community the decision is likely to be!

So the next time you hear of a federal policy impacting infrastructure decision making, don't say to yourself "Well, it is nothing to do with me, that's the Fed's responsibility". Discuss it with your colleagues; raise it with your professional organisations, your CEOs and *their* professional organisations.

And to get you started: what are the pros and cons of a 'national infrastructure fund'?

Taking on the challenge of Influencing the design of our most ubiquitous asset

Tom Friedman, New York Times Columnist and author of "The World is Flat" (about future trends that have already started - and which should be required reading for all infrastructure planners) wrote recently "If I am rooting for General Motors to go bankrupt and be bought out by Toyota, does that make me a bad person?

He went on to explain that should this happen, America would be better off since Toyota has new generation hybrid electric car technology that generates electricity whenever the car brakes and stores this for use instead of fuel. If this were to be combined with a plug-in hybrid (much like a battery that you charge up overnight) the combination of the plug-in hybrid system with a flex-fuel system that burns 80 percent alcohol and 20 percent gasoline, you could end up stretching each gallon of gasoline up to 500 miles!

He points out that this would not only improve the environment by reducing greenhouse gas emission but reduce the US dependence on crude oil that he says fuels some of the worst regimes in the world. It would also reduce the US import bill and improve their balance of payments.

Now that is a pretty impressive score for improving the design of our most ubiquitous asset!

Green is Good Again

Recently there has come word that some sections of industry in the United States are pushing for more action on greenhouse gases. Climate change is now beginning to be taken seriously. Why now? The generously disposed cite the necessity for big business to be good corporate citizens. And then there is the argument that alternative energy technology is going to be big business! I watch these big trends in America with interest to see what may happen here.

If you find it difficult to interpret and incorporate future trends in your decisions—take heart!

Everyone does, it seems. A recent UK academic study showed that private sector investors rarely looked forward more than 5 years—even when there was profit to be made in doing so, and even when the information was available! —It focused on two dozen age-sensitive industries - from toy and beer makers to nursing home operators and funeral homes - from January 1935 through December 2003. Experience shows that these industries increase their profits by about 5-10% for each 1% increase in demand. If investors were on the ball, they should be making these gains now, but they are not.

The moral for us is don't expect the private sector to lead, and especially not in long term infrastructure!

Future trends

A major portion of the labour force is beginning to retire and customers, especially those on fixed incomes (a demographic group projected to increase rapidly for the next several decades) have become increasingly resistant to rate increases.

If your rates are not covering your annualised asset consumption costs plus recurrent expenses then you will find it harder and harder to increase revenues the longer you leave it—and the only option will be to decrease services! Do you know where you stand? Have you calculated your AAAC (Annual Average Asset Consumption) ?

A practical man

Jack Kilby, the American engineer who invented the integrated circuit, died earlier this week at the age of 81. He won the Nobel Prize in 2000 and the importance of his invention to the way we live and work today is immense – and yet hardly anyone knows his name! Technology experts say he should be up there with Edison and Ford. Yet Kilby never made a fortune out of his invention and never wanted to. He was first and foremost an engineer and said simply 'engineers solve problems'.