

## GETTING VALUE WHEN PURCHASING ROADMARKING SERVICES – A Discussion

### Précis

This discussion attempts to provide a simple process to assist Road Controlling Engineers to gain a better understanding of the options available for maximizing the Return on Investment for monies spent with roadmarking contractors.

A change from being “demand-driven” to being “value-driven” is required where the real value of the roadmarkings is understood, the options available to provide the required value are understood and expenditure of money, time and emotions are focused on achieving best return on investment.

### Introduction

Road Controlling Authority Engineers, when seeking the services of a roadmarking contractor to provide roadmarking services, face a dilemma.

Due to a number of factors, not least past experience, limited budget and limited time, RCA Engineers tend to think “How do we get this roadmarking done with the least hassle?” rather than – “How do we maximize the services we can get for the available budget?”.

### Budget and Management Time

The money traditionally made available for roadmarking is significantly smaller than items such as roading and waste management. The size of the budget generally limits the RCA resources made available to manage the activity

The budget comes under pressure due to:

1. Roadmarking being traditionally seen as a maintenance activity
2. Short contract periods and tendering practices leading to small (or non-existent) margins

If you use or are considering the Lowest Price Conforming tender selection method it is worthwhile reflecting on the following:

*“There is scarcely anything in the world that some man cannot make a little worse, and sell a little more cheaply. The person who buys on price alone is this man's lawful prey.”*

*“It is unwise to pay too much, but it is worse to pay too little. When you pay too much you lose a little money, that is all. When you pay too little, you sometimes lose everything because the thing you bought was incapable of doing the things it was bought to do. The common law of business balance prohibits paying a little and getting a lot, it cannot be done. If you deal with the lowest bidder it is well to add something for the risk you run. And if you do that, you will have enough to pay for something better” - John Ruskin (1819-1900) English critic, essayist, & reformer*

That said if we accept that there is an existing budget for the activity, there are three options:

1. Increase budget by finding additional source of funding
2. Maximize the services for the available budget, or sensibly
3. Do both 1 and 2 together

Before we look at the specifics we need to consider the question - What is Value?

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## **What is Value?**

Value is subjective. It can only be determined by the receiver of the goods or services. The value does not come from the products or services, but from what the customer perceives that they have received from such goods or services. Perception is everything! Not only must there be real value but the customer must see the value.

Value is variable. The perception changes from customer to customer, from time to time and situation to situation.

So long as you, as a customer, perceive that the benefits you receive are greater than the costs (money, emotional, etc), you will believe that you have received value.

**Therefore: Value = Benefit - Cost**

## **Benefits of Roadmarking versus Features**

Roadmarking is commonly seen as a collection of features: visibility (both day and night), colour, skid resistance, etc.

Rather than focusing on these we need to consider the actual benefits of the roadmarkings, not least:

1. Safety – reduces the chance of road traffic accidents
2. Efficiency – facilitates the effective flow of road traffic around the road network

The discussion of these benefits is outside the scope of this paper but the reader will readily discover that the evidence of dramatic returns e.g. a ROI of 76:1 in improved traffic in a UK paper.

## **Costs of Roadmarking**

The costs of roadmarking are not limited to the budget, other costs include:

1. Time taken for tender evaluation and acceptance
2. Time taken to process progress claims
3. Time and emotional costs taken to process road-user complaints,
4. Time and emotional costs to get recalcitrant contractor to complete work to acceptable standard within required timeframe, etc

Added to this must be the time and emotional cost of doing business with a contractor who isn't in tune with your perception of value!

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### **Win- Win**

The objective of best business practice is to develop a “Win-Win” relationship where the organisation has profitable suppliers who are providing goods and services matched to the organisation’s (client’s) aims on a continuing basis.

Remember – The contractor as a supplier is trying to do the same thing as you are doing and that is to be successful in their own business.

Consider the following –

1. Do you think you are getting value? If not why not, or more importantly if yes, Why?
2. How did you select your contractor? – Remember John Ruskin?
3. Are services provided as Contractor, Subcontractor or Partner relationship?
4. What contract management method applies, methods-based, performance-based or hybrid?
5. Most importantly - What are your “Costs of Supervision”?

### **Some Causes for Receiving Lack of Value**

In our experience, Road Controlling Authorities commonly receive poor value. This is caused by a number of issues which may act in isolation but are more likely to combine and affect the way the Contractor and Contractor’s staff view the work package.

Some of the more common issues which have a detrimental effect on the value received are as follows:

1. Inaccurate schedule of markings – has impact from tender submission through to completion of work
2. Unclear specification including references to redundant and contradictory specifications
3. Transference of risk (real or implied)
4. Unrealistic timeframes (either too tight or prolonged)
5. Inappropriate temporary traffic management requirements
6. Lack of knowledge of options, and / or a lack of willingness to promote, facilitate or accept change
7. Lack of appropriate / timely supervision.

### **How to Develop a Perception of Value of Roadmarking Services**

1. Do you know exactly what roadmarkings you own (or have paid for)?
2. What are the service requirements for these markings?
3. What materials are you using, and why these at the exclusion of others?
4. What alternative materials could you be using?
5. What constraints, e.g. timing have you applied to the work packages?
6. Is there a differentiation between routine activities and unscheduled items?

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### **Marking Service Levels**

Pavement markings are required to perform under a wide range of service conditions, wet nights, overhead lighting, etc however they do not work in isolation, nor are all required to provide the same to road-users.

While a centre-line or lane line on an arterial road is required to provide optimum visibility in all situations, a section of no-stopping-at-all-times (NSAAT) is supported by other signage and only needs to be visible enough to enable enforcement.

There is a potential for considerable gains to be made by reviewing the inventory and assigning appropriate service levels to markings. This enables appropriate resources, materials etc to be assigned.

For example money and resources not spent on regular painting of NSAAT (after a good application of paint and beads to optimise life) can be invested into marking arterials in long-life material having superior performance under all conditions. Another example would be where money and resources could be reassigned from regular repaint of painted islands in advance of raised island to the kerb-spraying of traffic islands.

While some Engineers split network into “rural” and “urban” a better approach is consider the motorists needs and to assign particular service levels to particular networks. A global example of this is the current European Specification which offers alternate service levels for particular road networks.

### **Remark Cycle**

To gain optimum value from a marking it ideally will match the life of the pavement, and if it cannot do that it needs to be able to be refreshed at cost-effective intervals that fit neatly into the pavement repair / rebuild cycle.

### **Inventory of Markings**

The importance of knowing exactly what markings exist, or more importantly what markings you want to own, cannot be overstressed.

There is no value in over-painting a long-life marking. Similarly there is a loss of value where pavement repairs are carried out regardless of what markings have been installed. Often repairs can be carried out in such a manner that marking is not destroyed or compromised.

Another concern is the legality of the existing markings. Under the Traffic Control Devices Rule (TCD) it is illegal for the contractor to install or maintain markings outside of the Rule which can cause considerable loss of time / efficiency while the issue of nonconforming markings is resolved.

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### **Schedule of Markings**

Clear concise schedules enable accurate tender submissions, effective claim processing and ability for both the RCA and contractor to focus on what needs to be installed and / or maintained. A difficulty which commonly occurs is where a contractor misunderstands what a particular marking is or misunderstands the extent of the marking. For this reason the NZRF has developed a standard schedule of items.

Obviously, it is not cost effective to install long-life markings on sections of the network which are to be resealed or reconstructed.

### **Marking Conditions**

The conditions under which the markings are installed or remarked can have a dramatic impact on the value for the effort / money expended.

Inappropriate traffic management can dramatically increase the costs relating to marking. Requiring pilot vehicles etc can double or treble costs of installation. The risks to motorists and roadworkers is best managed by having the roadworker work at time of least hazard of vehicle impact rather than increasing the protection implied by shadow vehicles which may in fact raise the potential for harm. Similarly, the lack of effective traffic control can lead to markings being trafficked with the transfer of marking onto road surface, or less visible but equally damaging, the rolling and loosening of the beads in the marking.

Scheduling the work at the time of year where inclement weather is to be expected can lead to all sorts of problems including the risk of markings being rained on immediately after application and markings being applied on damp or wet roads. For optimum bead retention the markings should not become wet for a period of up to 24 hours.

### **Materials Options**

There have been considerable improvements made in the area of marking systems since the days of the basic alkyd paint applied six-monthly under the old National Roads Board days, however it is my experience that there are still those who believe that a quick flash of paint with a sprinkling of beads gets the job done.

It can be demonstrated that applying a waterborne paint at 300µm with 275gm of beads will give a service life in excess of two years for all but our most heavily trafficked roads; this is a saving of three applications of the alkyd with attendant traffic control etc.

A common approach is to identify sections of the network justifying a higher level of treatment and specifying a higher film build. While this has merit there are far greater gains in understanding just what materials are available.

While one would have hoped that the NZTA materials approval scheme would have been the source of such information, sadly this is not the case. The information is out of date and sketchy,

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with few paint options available at the level (3 Million vehicle passes) considered acceptable in the current roading environment.

However, there is a wealth of information available for an interested Roothing Engineer to work through with their contractor to arrive at a treatment which provides optimum value for money. Sources include the NZRF (Materials Guide and related papers) and the internet.

### **Materials and Treatments**

The discussion of all of the options and their issues is outside the scope of this discussion, however some simple rules apply.

Roadmarking beads – these must be applied to all markings that are either subjected to trafficking and / or required to be seen by road-users. Paint is inherently soft, requiring the beads to carry the traffic loads. Thermoplastic and other marking materials containing beads also require surface applied beads to perform until the surface is abraded sufficiently to expose the constituent beads.

Paint – Always use the paint and bead combination rated for the highest trafficking rating, the differences in the cost of the paint in the overall scheme of things is so small as to be insignificant. Always specify a dry-film build that is sufficient to hold the beads being surface applied. Do the sums, 180µm is insufficient to hold a 600µm bead to half it's diameter on a smooth surface let alone on a grade 3 chip.

Long-life products – always consider the whole-of-life costs. Sure, many of them last a long time, but if for instance, you need to remove them for any reason and you end up destroying or compromising the pavement, you have lost the value you may have gained. What was said about paint applies equally here too; for example, there are thermoplastic materials having better rosins and higher bead percentages which significantly outperform the “cheaper” traditional brews.

Marking removal – the pavement integrity is paramount. All too often the pavement is damaged or compromised by the desire of the Engineer / contractor to remove every speck of marking. Road-users are guided by the predominant marking, so lightly remove old markings and strongly mark new ones. The NZRF Line Removal Guide provides guidance here.

### **Putting it all together**

Gather information - work with incumbent contractor and others to identify:

1. Low value for money / effort items
2. Alternative products, processes, methodologies, time schedules
3. Alternative contract management methods, options
4. What you really need, as opposed to what you think you are getting

Consider the available budgets - a common problem with stand-alone packages is that the package of work is too small to sustain a contractor. An additional source of funding which can be overlooked is that related to Road Safety Improvement Initiatives, an example of which is the application of audio tactile profiled (ATP) to both edge-line and centre-line on the nations highways by NZTA.

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Review the contract options, stand-alone, combined, methods-based, performance-based or hybrid. Each of these have particular merits. The choice is principally determined by the Engineer's experience and staff abilities. Provided that the aim is to look at the value, all will work, the key is understanding the need to set and maintain an acceptable standard of marking.

If considering performance based contracts where you are transferring risk, be aware of situations where the contractor is faced with situations outside of their control i.e. snow plowing and gritting.

When preparing the Request For Tender (RFT), check for:

1. Clarity of requirements, remark cycle, special conditions, etc
2. Accuracy of schedule(s)
3. Flexibility, in particular encourages more contractors to bid, encourages contractor to offer alternatives which offer value, an ability to change treatments as you learn more, etc

The NZRF has developed a Contract Development checklist aimed at assisting those putting contracts together to arrive at a contract document which focuses on the critical issues.

When assessing tender submissions check for:

1. Contractor understanding of requirements
2. Contractor desire to provide value
3. Appropriate pricing

On the subject of pricing, there may be a valid and justifiable reason for a contractor to submit a lower than expected price. Care needs to be sure that price model presented is not one which may be aimed at, a) being funded by variations or extensions to the contract, or b) marking the high return items and leaving the Engineer to find another contractor to complete minor works (back to Ruskin who I started discussion with).

The NZRF has also developed a Tender Evaluation Checklist. This checklist assists the Engineer to identify the characteristics of an acceptable bid package.

When accepting a tender, it is critical that both parties build and cement a win-win approach to the contracted works. Both parties both need to "own" and be proud of the network. A key component of the Contract Quality Plan (CQP) is the Specification Review Schedule (SRS) by which the Contractor identifies each of the performance requirements and describes how such requirements are to be met. The NZRF also provides information on SRS's.

Increased supervision at commencement is wise. Use the "Kick off meeting" to confirm your requirements and to set agreeable limits. Take the opportunity to review T 8 and T 12 certification and even observe certification of plant or unfamiliar methodology / processes.

The first Claim for Payment is the critical stage in building a good working relationship aimed at providing optimum value. Time spent at this stage is reaped later in the contract, the old biblical adage of reaping what you sow is true – accept a low standard and you will continue to get a low standard, encourage a higher standard and it will improve.

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It is particularly hard for Engineers who have accepted a tender only to discover that contractor is not going to deliver. However the NZRF has developed a Contract Management Site Review Checklist which enables a third person, either RCA or Independent to contact an audit to determine the level of compliance. It is better for all that the Contractor is given the option to shape-up or ship-out early in the contract rather than letting it fester.

While on this subject, we have observed that in particular circumstances contracts have been let on a three-year good contractor / poor contractor cycle. This is where a good contractor is given three years to bring the network up to a acceptable contract only to lose it to a poor contractor who does the least possible to get paid and can get away with it because of the high base standard.

A few simple checks will quickly ascertain that the correct materials have been and are being applied at the agreed rates. But do it early in the contract and follow up with spot visits.

### Conclusion

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