

# What you should know about **CONCRETE PAVEMENT**

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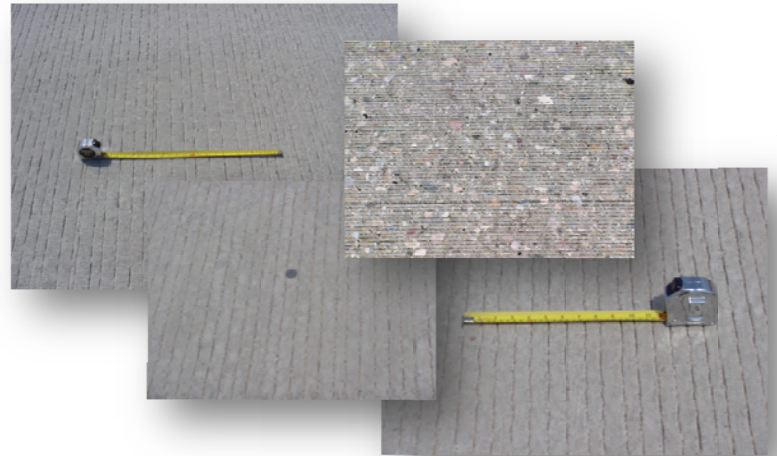
## VALUE

### **Oil Inflation – Concrete Will Save You Money**

Flexible pavement prices are related to oil refining processes and Statistics Canada shows that flexible paving prices are increasing during this continuing period of oil inflation. This has led to concrete pavements being more financially beneficial on a first cost basis (in addition to the life-cycle cost benefits).

### **Noise Control**

Sound level is primarily a function of the surface finish not the material it is constructed from. Many types of concrete pavement surface textures have been developed to reduce concrete pavement noise related problems. The concrete pavement textures shown to the right all produce different noise levels and different frequency spectrums (tones).



## SAFETY

### **Increased Visibility**

Concrete is naturally brighter and more reflective than flexible pavement. This requires less energy to illuminate comparable areas, which is good for the environment, pedestrian safety, and can save on street lighting costs.

### **No Rutting**

Concrete under normal use will not rut, so there is no risk of water accumulating in ruts and causing hydroplaning.

### **Superior Traction**

Plastic concrete surfaces can be textured to provide skid resistant surfaces that are needed to allow safe vehicle braking action and directional stability. This textured surface also improves drainage.

## DURABILITY

### **Continues to Gain Strength**

After its first month in place, concrete continues to slowly gain 10 percent in strength during its life.

### **Minimal Maintenance Requirements**

Concrete pavements provide long-term value because they will frequently outlast their design life expectancy and traffic loads.

## SMOOTHNESS

### **Specifying Road Characteristics**

Technology in today's road design and placement equipment allow for owners to specify the ride characteristics of their concrete road. Any future road cut repairs when finished properly, can be completed quickly without affecting ride quality.

### **Smoother for Longer**

The rigidity of concrete pavements allows it to keep its smooth riding surface long after construction.

### **Longer Lasting Roads**

Concrete can withstand even the heaviest traffic loads, without the worry of ruts, shoving or washboard effects that are common with flexible pavements. Also, concrete roads will offer forgiveness when future traffic expectancy is underestimated.

### **Utility Cuts – No Problem**

There is a common misperception that concrete cannot be removed for repairs or utility cuts. The reality is that concrete pavement repairs are easily made with readily available equipment and materials. By using quality concrete and following full-depth repair techniques, it is relatively easy to construct long-lasting, durable patches that can extend the concrete pavement's life for many years.

## PAVEMENT COST COMPARISON TOOL - NEW



### **CANPav<sup>®</sup> Software**

CANPav<sup>®</sup> can show you how concrete pavements are now a lower first cost than flexible pavements. Let the RMCAO show you how to compare your pavement design and costs using your own numbers.

If you would like to take advantage of the concrete savings, email [pavement@rmcao.org](mailto:pavement@rmcao.org) for more information.



## VERSATILITY

### **Variable Design**

Concrete pavements can be designed for any load and traffic for streets and roads, parking lots, intersections and entrances.

### **Fast-Track Concrete**

Concrete pavement can be open to traffic in as little as 12 hours.

# PAVEMENT PROPERTIES

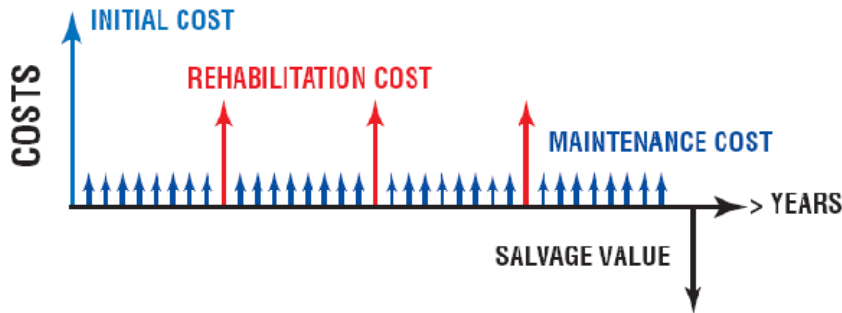
## CONCRETE PAVEMENT PROPERTIES

1. Flexural Strength 4MPa
2. Reliability 80%
3. K-value 100
4. Design Life 30 years

## FLEXIBLE PAVEMENT PROPERTIES

1. MAAT 7 degrees C
2. Modulus of Resilience  
*sub-grade support 20MPa*
3. Design Life 30 years

The **Life-Cycle cost Analysis** provided with each road classification shows the initial, rehabilitation, and maintenance costs for the equivalent concrete and flexible sections.

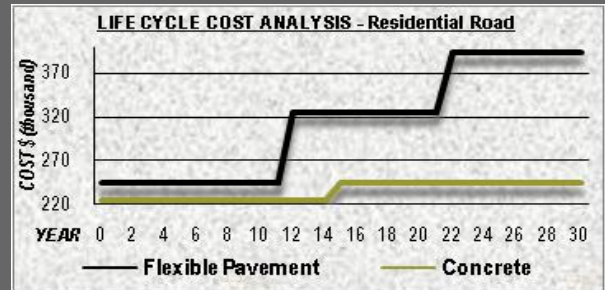


The life-cycle cost analysis example is based on:

1. ENR August 2006 Issue 20 City Average Prices
2. Initial Costs 1.6km 3.6m wide pavement with curbs placed separately
3. Design Period 40 years
4. If integral curbs are placed with concrete pavement, an additional \$45,000 can be saved

### RESIDENTIAL

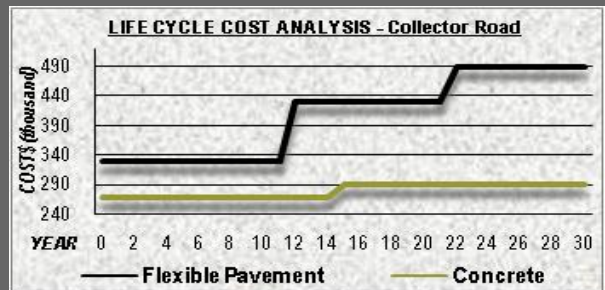
(ADTT 3 trucks/day, 11,500 ESALs, 2-lane with curbs) initial costs



Source: ACPA – Equivalent Designs: Concrete vs Asphalt

### COLLECTOR

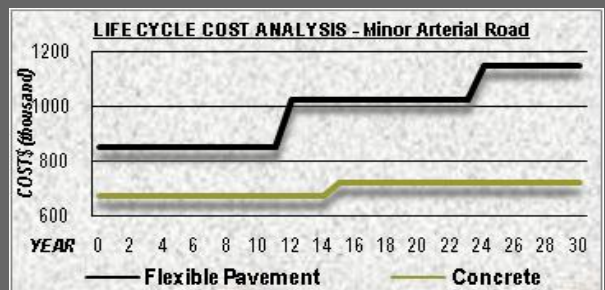
(ADTT 100 trucks/day, 405,000 ESALs, 2-lane with curbs)



Source: ACPA – Equivalent Designs: Concrete vs Asphalt

### MINOR ARTERIAL

(ADTT 500 trucks/day, 3,500,000 ESALs, 4-lane with curbs)



Source: ACPA – Equivalent Designs: Concrete vs Asphalt

#### References:

1. All Concrete Isn't Created Equal – American Concrete Pavement Association (QD002P)
2. Why is concrete such a great pavement choice? – 2008, American Concrete Pavement Association.
3. Equivalent Designs: Concrete vs. Asphalt – 2006, American Concrete Pavement Association.
4. Durable Concrete Pavement – American Concrete Pavement Association (PL602P)



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