



ACN 109 200 900

## AUSTRALIAN SECURITIES EXCHANGE ANNOUNCEMENT

10 December 2015

### EDENCRETE™ - US UPDATE

#### EDEN RECEIVES FORMAL APPROVAL FROM GDOT FOR USE OF EDENCRETE™ IN GDOT 24 HOUR ACCELERATED CONCRETE APPLICATIONS AND CLASS B CONCRETE APPLICATIONS

Eden Energy Limited (ASX: EDE) is pleased to announce that, as previously foreshadowed (ASX: EDE 23 November 2015), it has now received formal written advice from the Georgia Department of Transportation (GDOT) that GDOT has:

- Approved the use of EdenCrete™ in GDOT construction and maintenance projects in both GDOT's Class 24-Hour accelerated strength concrete mix applications and also its Class B concrete application; and
- GDOT has classified EdenCrete™ as "Field Tests" (i.e. to undertake a further Field Test) in the applications of Portland cement concrete pavements (GDOT Specification Section 430 and/or 439) and concrete whitetopping (GDOT Specification Section 453) (replacing the surface of an asphalt pavement with a concrete surface layer).

These decisions were based on the recommendations of the New Products Evaluation Committee that EdenCrete™ be "Allowed for Use", arising out of its meeting on 19 November 2015 in Atlanta, and after considering the results achieved in the full depth slab replacement field trial of EdenCrete™ on the Interstate highway I-20 in August 2015.

GDOT has advised that this does not obligate GDOT to use or specify the use of EdenCrete™. Eden intends to assist GDOT engineers and designers wherever possible to draft precise specifications to cover the use by GDOT of EdenCrete™ in its Class 24-Hour accelerated concrete mix applications and also its Class B concrete application. The timing of this process is not certain but the department's estimate is up to three to six months.

The further Field Tests of EdenCrete™ for concrete pavement and concrete whitetopping applications are intended to be undertaken with GDOT in Augusta early in 2016 as possible.

#### *GDOT- I-20 Field Trial -Compressive Strength Results (ASTM C39)*

The compressive strength results through the 56-day trial showed a 45.8% improvement over the control mix (see Figure 1 and Table 1 below). The column in orange in Table 1 shows the substantial increases in compressive strength of the concrete enriched with EdenCrete™.

The independent, GDOT approved, S&ME Inc. laboratories, conducted the compressive strength tests in Augusta, Georgia, in accordance with ASTM Standard C39.

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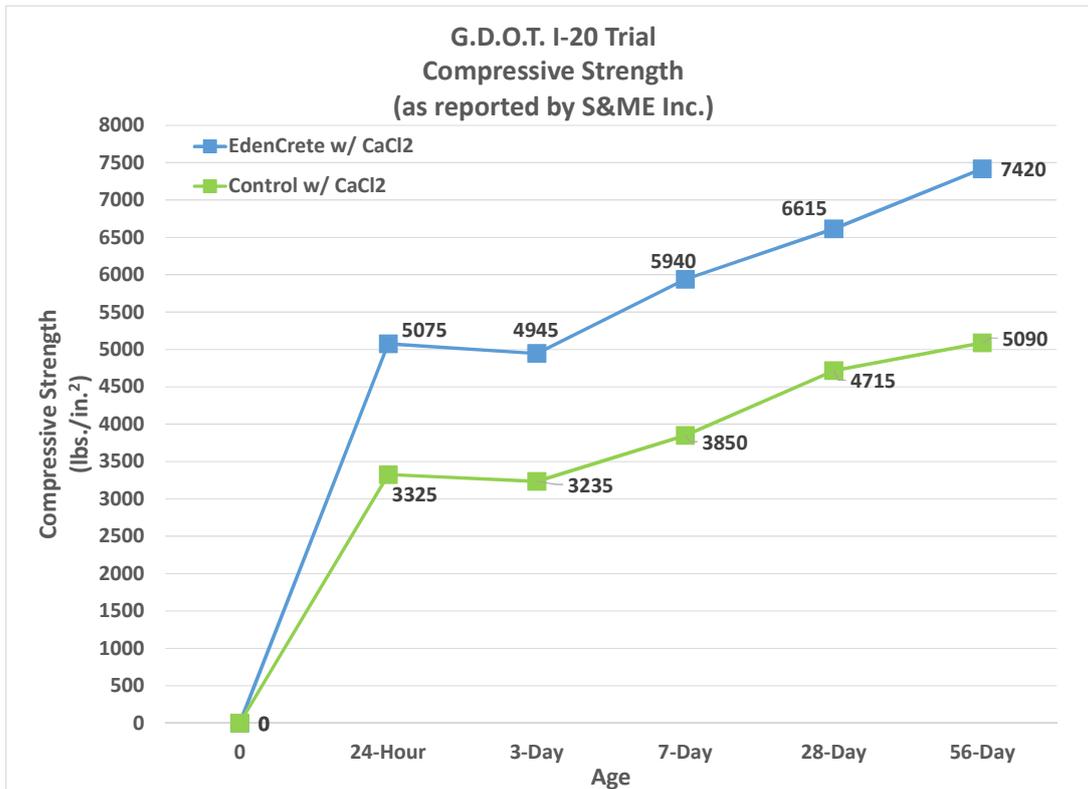


Figure 1: Compressive Strength Results, GDOT I-20 Trial (ASTM C39)

	Fresh Properties		
	EdenCrete	Control	
Amb. Temperature	95	89	
Ambient Cond.	Sunny, Clear	Overcast	
Conc. Temperature	94	92	
Slump	2.50	4.75	
Air Content	2.7	6.0	
Unit Weight	148.1	139.9	
Compressive Strength (lbs./in.²)			
Age	EdenCrete	Control	EdenCrete % Increase
0	0	0	N/A
24-Hour	5075	3325	52.6
3-Day	4945	3235	52.9
7-Day	5940	3850	54.3
28-Day	6615	4715	40.3
56-Day	7420	5090	45.8

Table 1: Tabulated Fresh and Hardened Concrete Properties GDOT I-20 Trial (ASTM C39)

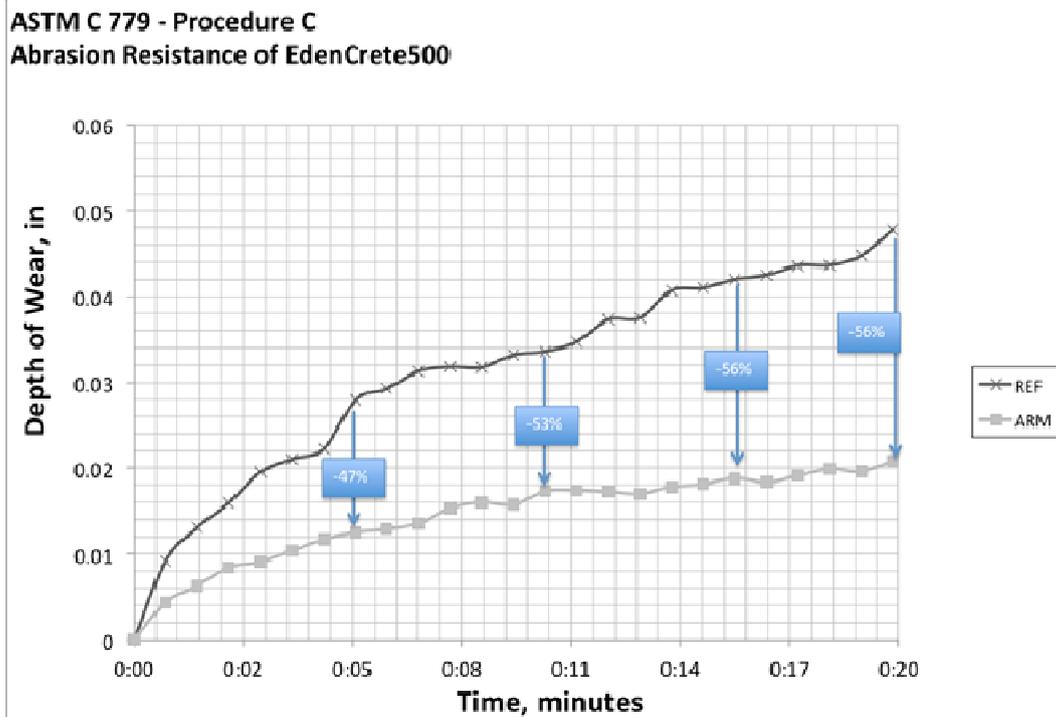
From 24-hours through 7-days, EdenCrete™ increased the compressive strength of the reference concrete by an average of more than 50%, by more than 40% at 28 days and by nearly 46% at 56-days. These strengths achieved by EdenCrete™ are more than double at 28-days, and 41% more at 56-days, than required in GDOT Section 504–Class 24-Hour Accelerated Concrete Specification.

**GDOT- I-20 Field Trial -Abrasion Resistance (ASTM C779)**

Test cylinders from the I-20 Field Trial were also tested by Intelligent Concrete, Inc., a laboratory in Colorado with the appropriate test equipment, to evaluate the benefits in abrasion resistance at 56-days that EdenCrete™ enriched concrete delivers. Testing was conducted according to ASTM C779: Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces. Results of

the abrasion testing are shown in Figure 2 below, with the test cylinders showing the wear rings after the tests (see Figure 3), with the substantial reduction of visible aggregate in the EdenCrete™ test cylinder being clearly evident, with the reference test cylinder being left with a rough, uneven surface under the wear path of the steel balls, but with the EdenCrete™ test cylinder being smoother, more uniform wear path and with significantly less visible aggregate (see Figure 3).

At 56-days, EdenCrete™ had reduced the rate of abrasion of the concrete mix by approximately 57%. On completion of the 20-minute test, the total magnitude of abrasion measured for the EdenCrete™ sample was lower than the level of abrasion sustained by the reference cylinder in 5 minutes (see Figure 2).



**Figure 2: 56-Day Abrasion Resistance Results (ASTM C779), GDOT I-20 Trial**



**Figure 3: Photograph of test cylinders after abrasion testing- EdenCrete™ cylinder on the right with the shallower wear ring and far less visible aggregate**

These trials illustrate the ability of EdenCrete™ to both harden and toughen the concrete surface of GDOT's Class 24-Hour accelerated mix and increase the capability of enduring a much more abrasive environment than the reference.

As a conclusion from these results, Eden considers that, with the addition of EdenCrete™, it may be possible to reduce the cement content of the Class 24-Hour accelerated mix and still achieve the strengths required within the Sect. 504 specification. However, more testing would need to be conducted to evaluate the strength of such a mix having less cement, its performance during placement and over a longer test period.

## **Georgia Infrastructure Market**

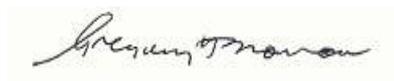
In addition to thousands of miles of concrete roads and highways, Georgia has in excess of 15,000 concrete bridges (ranging from small to large), a recent audit of which indicated that over 4,000 were not suitable for repair and need to be replaced over the next 20 years, at an estimated annual cost in excess of \$300 million per year.

If this process in Georgia results in a full approval by GDOT of the use of EdenCrete™ in concrete for all its infrastructure being obtained and specifications for its use being developed, it is considered likely to accelerate the process of obtaining similar approvals by the Departments of Transport in other US States, with Eden's longer term objective being the opening up of the national US infrastructure market.

The GDOT approvals of EdenCrete™ detailed above, based on the I-20 field test and laboratory test results detailed above, confirm the very significant progress that has been made towards Eden achieving its longer-term goal of broad penetration of EdenCrete™ into the huge US infrastructure market.

## **BACKGROUND**

*EdenCrete™ is Eden's 100% owned, proprietary carbon-strengthened concrete additive, one of the primary target markets for which is improving the performance of concrete used in the construction and maintenance of concrete roads, bridges and other infrastructure. Additionally, it has potential for use in a range of other applications including high-rise building construction, marine and coastal applications, water storage and pipelines, and pre-fabricated concrete structures and products.*



**Gregory H. Solomon**  
Executive Chairman