

Specifying high-performance composite access covers to improve infrastructure sustainability.

Vincent Cooper





WELCOME  
TO Fabulous  
LAS VEGAS  
NEVADA

VEGAS

PIRELLI P ZERO

PIRELLI

ORACLE  
Red Bull  
Mobil 1





Loose manhole cover causes cancellation of first Las Vegas Grand Prix practice





# Agenda

- Evolution of our industry and the role of new materials
- Case studies, product examples
- Testing and performance requirements
- Specification

# Cavanagh

*Cast across the streets of Ireland*





# Cavanagh

*Cast across the streets of Ireland*



# 2013 - Closure of Birr Foundry

RTÉ NEWS SPORT ENTERTAINMENT BUSINESS LIFESTYLE CULTURE PLAYER TV RADIO  
NEWS Middle East Ireland World Business Stardust Ukraine Climate Politics Nuacht RTÉ Invest

## Offaly iron plant to shed 32 jobs

Updated / Monday, 21 Oct 2013 16:07



Management at EJ said the structure of the firm is no longer commercially viable

An iron foundry in Co Offaly is to lay off 32 workers under restructuring proposals.

Management at EJ, formerly Cavanagh Foundry in Birr, told workers that owing to loss-making activities they propose to reduce the staff from 50 to 18.





# EJ in Ireland

- State-of-the-art composite plant commissioned in 2018.
- Composite & steel products, sales and distribution.
- 70 employees
- Built on a foundation of research and technology development
- Multiple accreditations, innovation and operational awards.



# Markets we serve



Highways



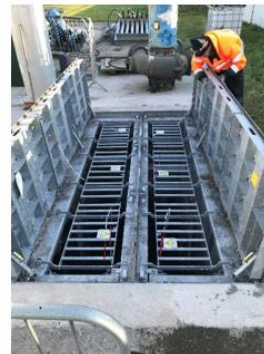
Clean Water



Comms



Building



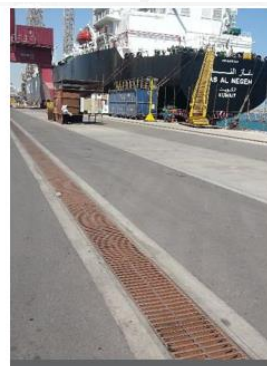
Waste Water



Utilities



Airport



Port



Public Realm





# The need for Innovation

*Health & Safety*

*Smart Infrastructure*

*Hybrid Products*

*Construction Speed*

*Aesthetics*

*Environmental*

# Safety & Ergonomics





# Safety & Ergonomics

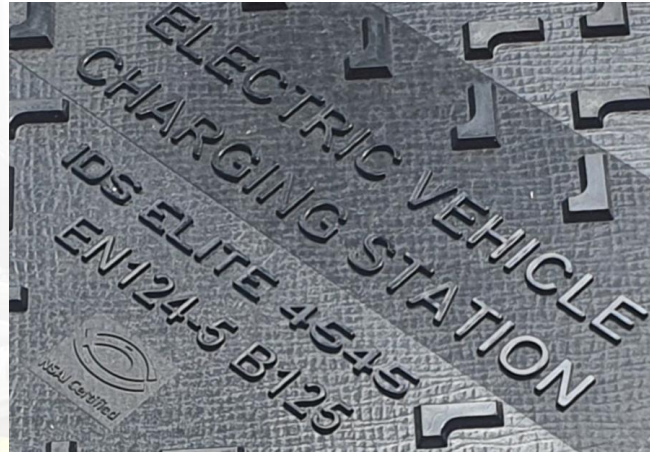


# Aesthetics





# Aesthetics



# Smart Infrastructure

- Integration with Utility Asset Management Systems
- Intelligent traffic systems
- Maintenance and Inspection Records
- Pair with sensors (security, monitoring, etc)







## What is a Sustainable product?

*“a product which will give **as little impact on the environment as possible** during its life cycle”*

*“a product that it’s **easy to build** with and **consumes less resources in production, transport and installation**”*

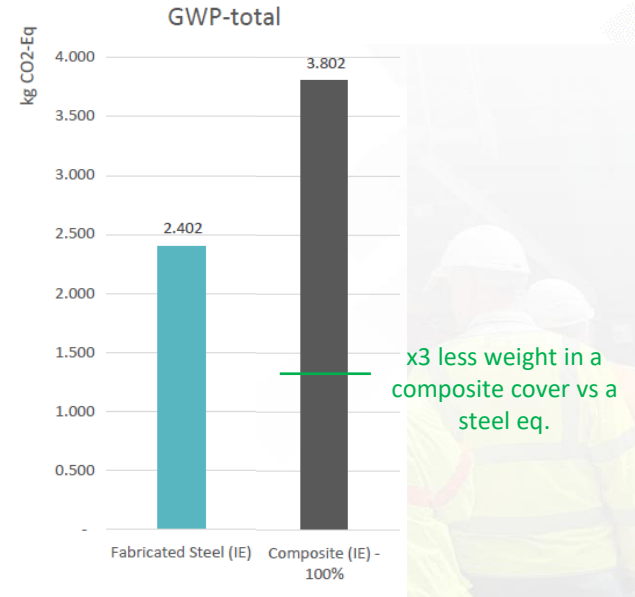
*“a product that can be **maintained in a specific state for an indefinite** (or very long) **time**”*

# Sustainability

- Construction industry is one of the biggest emitters of carbon.
- Material and technology innovations
- Life cycle analysis (LCA) & EPDs
- External verification by Viridis



Measured climate change impact under a declared unit of 1kg of access cover manufactured.





# Sustainability

Packaging multi-product solutions for carbon reduction



Composite  
STRETO

CO<sub>2</sub>↓



Polymer Modified Mastic  
Asphalt installation

CO<sub>2</sub>↓

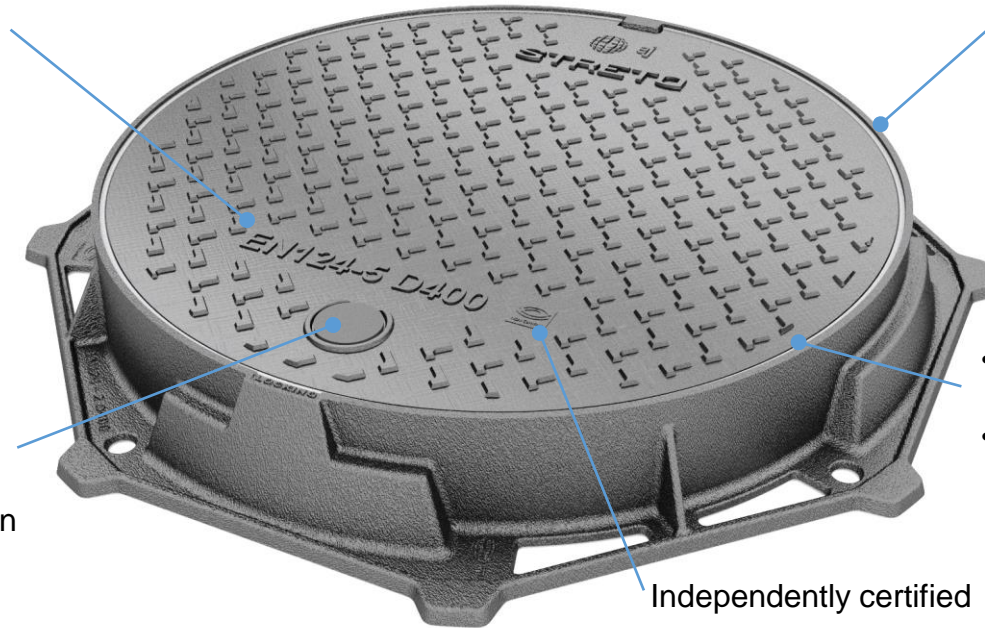


Innovative surface texture with  
smaller aggregate for increased  
skid resistance. Active travel  
schemes.

CO<sub>2</sub>↓

# D400 Composite for road installation

- EN124:2015 D400
- Lightweight (23kg)
- 600mm CO



- Twin wall MAESTRO design
- Robust ductile iron frame for high rigidity and installation performance

- ¼ turn SS locking with captive key
- Integrated lifting function

- Continuous EPDM seal in horizontal and vertical faces
- No noise pollution, movement or wear

Independently certified



# Testing and Performance requirements

EN124:2015 standardises the design and manufacture of **composite** covers to ensure **good quality, durable** products.

EN 124-1:2015	Definitions, classification, general principles of design, performance requirements and test methods.
EN 124-2:2015	Gully tops and manhole tops made of <b>cast iron</b>
EN 124-3:2015	..... <b>steel or aluminium alloys</b>
EN 124-4:2015	..... <b>steel reinforced concrete</b>
<b>EN 124-5:2015</b>	..... <b>composite materials</b>
EN 124-6:2015	..... <b>PP, PE, PVC-U</b>

## Extensive material and product testing:

- Hardness, Weathering (UV)
- Permanent set, Load, Fatigue, Creep
- Impact, Heat, Water absorption, Fuel absorption
- Anti-skid



GULLY TOPS and  
MANHOLE TOPS

I.S. EN 124-5:2015

**NSAI Certified**

# In-service testing





# Specification (example)

- Cover and frame in full compliance with [EN 124:2015 D400](#).
- Cover must be made from composite material with [long continuous fibres](#) and a [thermoset matrix resin](#) and meet [all requirements of EN124-5 D400](#), including [fatigue resistance](#).
- Cover weight must not exceed [23kg](#).
- Frame to be made from ductile iron to EN124-2 D400 requirements with a [600mm diameter clear opening](#) and a [double-wall design](#) for increased rigidity and installation performance.
- All metallic fittings must be [corrosion resistant stainless-steel](#) material.
- A continuous [EPDM cushioning insert](#) must be used to prevent vertical and horizontal contact and wear at the seating and to ensure non-rock stability.
- Locking shall be achieved using a [quarter-turn captive key](#) mechanism that ensures the cover is locked before the key can be removed.
- Independent [third-party certification](#) is mandatory.

**Contractor**

**Supplier**

**Engineer**

**Local Authority**

**Specifier**

**H&S**

**Consultant**

**Procurement**







**ejco.com**

vincent.cooper@ejco.com

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