



An Roinn Iompair,
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Bridge Asset Management Project.

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Conservation Accredited Engineer [CARE]

12th September 2019



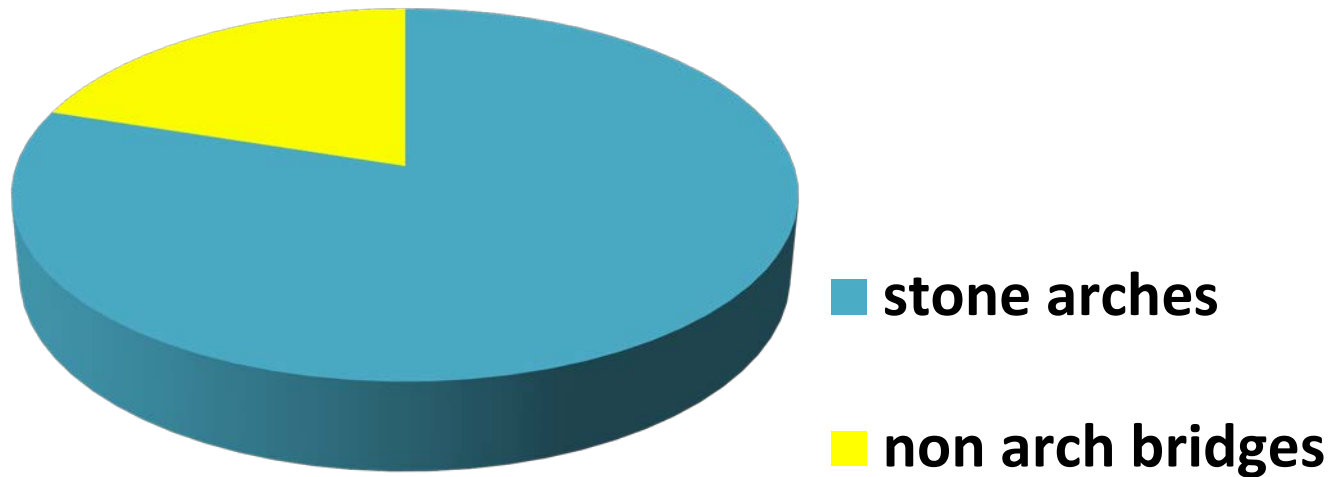
Our bridges are often under valued

- LA's are owners and responsible for the upkeep of more than 92% of the Road bridge stock in the state.
- It is estimated that this amounts to at least 40,000 bridges.
- The guidelines define a bridge as a structure with a span of 1.2m or greater.
- A rough estimate of the replacement value in purely *monetary* terms, is c €15 Billion

Masonry arch bridges make up 80%+ of our LA bridge stock and all are 140 years old or older



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LA Engineers have a responsibility as Custodians, not just owners, to preserve this part of our functioning built heritage.

Value means more than money!
Symbolic – joining communities
and counties, cultural and built heritage
Spanning time as well as distance



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12/09/2019

GJS c

Norman [medieval]– 13th century supporting traffic



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Gothic –thirteenth century, carrying vehicular traffic



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Renaissance ?

This bridge was built in the renaissance period, but clearly has medieval characteristics



Baroque



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Iron and steel era



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Modern – c 1930



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Modern bridges say < 80years old
only make up about 15% of our LA
bridge stock



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CHAPTER 7 – CONSERVATION IS IMPORTANT AND RELEVANT TO THE VAST BULK OF THE LA BRIDGE STOCK



At least 500 years old. Repaired and restored by Sligo Co Co , DL in 2012.
Protected structure and de-facto a National Structure/Monument

The bridge info deficit addressed



Following the success of the **Pavement Management System (PMS)**, DTTaS formed a bridge group to produce bridge guidelines and devise a bridge module to add to the PMS suite of applications to:

1. Collect basic data of this enormously valuable and ageing asset, in a simple, efficient way capable of interrogation.
2. To recognise and assess, the durability and sustainability potential, of repairing most masonry arch bridges.
3. To enable/empower LA Engineers with the tools and training to carry out bridge inspections, etc, themselves

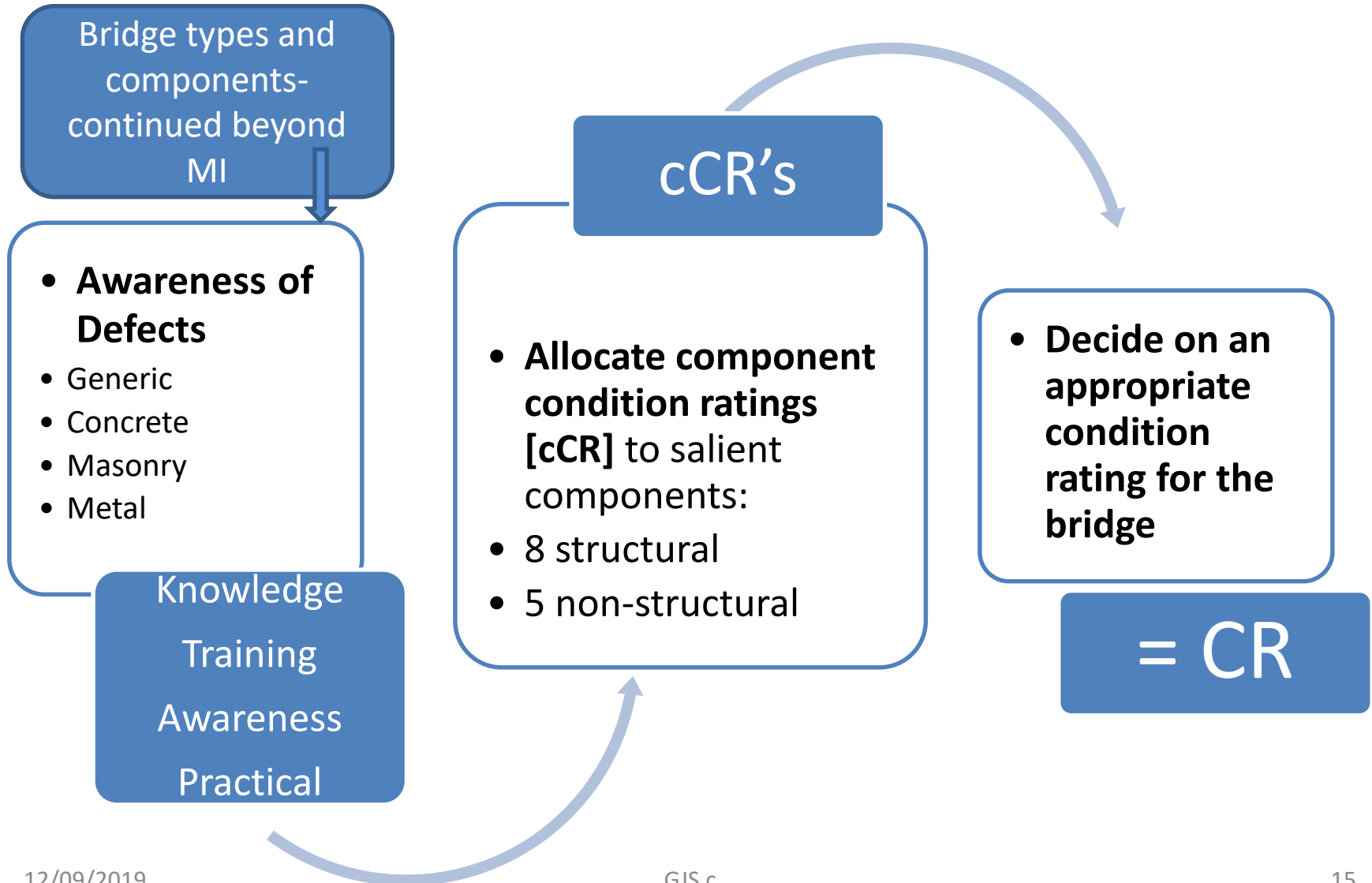
THE ENGINEERING INSPECTION[EI]



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- The Engineering Inspection[EI] is the essential bridge inspection for LA bridges
- The EI is broadly equivalent to the Eirspan's Principal Inspection, but is more focussed on masonry bridges which dominate the LA bridge stock [80%+]
- The Guidelines cover all bridge types and sections 5 and Appendix A, cover the EI

Engineering Inspection[EI]



The Engineering Inspection[EI]



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- The EI has been developed for use with the Tablet Application, which is part of the Pavement Management System[PMS], ie the live bridge module therein
- The EI allows for speedy on-site inspection input with direct up-load to the PMS system or when you return to the office
- The EI is essentially a visual inspection that requires clear views of all the components, so access to all spans to look for defects eg cracks, missing blocks, corrosion, scour damage at low flows etc, is necessary.

The Engineering Inspection[EI]

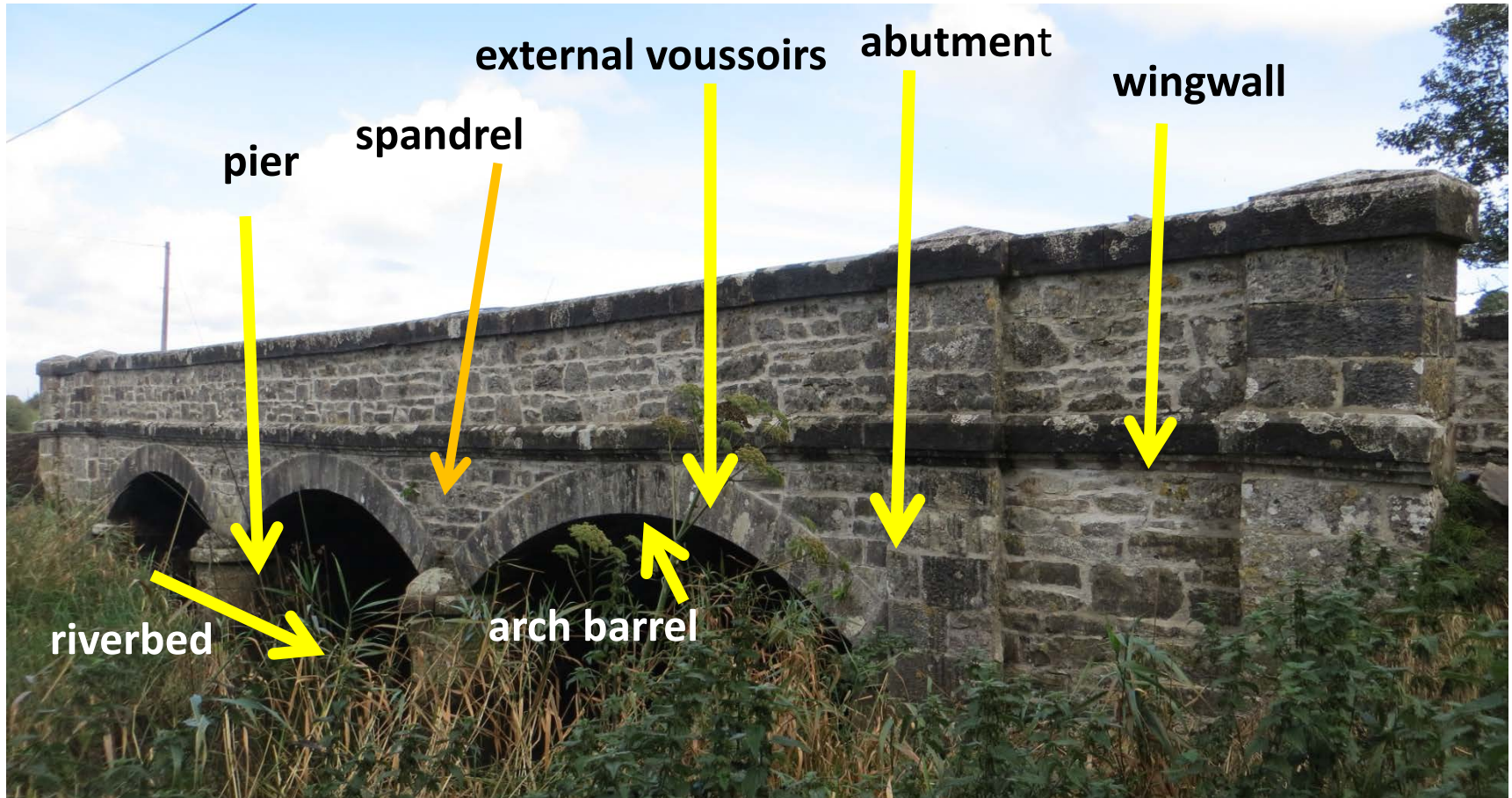


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- Engineers may also wish to do a bit of tapping and prodding and/or taking a few specific measurements.
- Structural components define whether the bridge has integrity and its structural condition
- Engineers must allocate component ratings [cCR].
- 13 components/elements + optional one
- 8 components are deemed STRUCTURAL.

LA Bridges and the Engineering Inspection

Structural components of a masonry arch bridge – inform the Condition Rating [CR] of the bridge.



The Engineering Inspection



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Guidance document – Engineering Inspection Table 5.2

Condition rating scale for components [cCR] and overall [CR].

Condition Rating (CR) – Give rating from one of these conditions			
Rating	Damage	Works Required	When
1	Insignificant damage	Minimal work required	non-critical
2	Some damage	Minor maintenance work required	repair when convenient
3	Significant damage	Maintenance work required	repair soon
4	Critical damage	Urgent repairs or strengthening work required	repair immediately
5	Ultimate damage	Bridge has failed	strengthening works or replacement required, road closure or TMP

NB: Damage = defect

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- Appendix A of the Guidelines includes photographic examples of components and the associated component condition rating cCR



The Engineering Inspection[EI]



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- Condition Ratings values of 1 [good] to 5 [failure]
- 30 photographs can be added for each bridge
- **The all important Condition Rating [CR] for the bridge is input by the Engineer at the end of the inspection process.**
- The EI tablet allows for text entry of salient matters, as decided by the Engineer for each component and overall.
- The Guidelines include useful tables eg Table 5.3 with descriptors of example defects and severity

The Engineering Inspection[EI]



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Pillars

The Bridge initiative has several components:

- The BAMS – bridge guidelines –available at www.roadguidelines.ie
- The APP for your tablet – for user rights contact DTTaS Support Office, Kildare
045 988950
- Training

Bridge Engineering Training



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- Training for LA Engineering staff is a vital component of this bridge initiative, see Circular RW 09/19.
- Introductory Bridge Course [1 day] covers the BIS and MI- Contact your nearest Regional Training Centre or LASNTG – available now.
- Engineering Inspection [EI] course – for qualified LA Engineers with experience AND who have completed and passed the BIS/MI course – commencing near the end of the year
- Additional courses planned for 2020.



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15' span c1800 bridge,
repaired and rebuilt for
under €60, 000.
Co. Sligo



GJS c

Thank you.
Any questions.

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