



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



Cumann Lucht Bainistíochta Contae agus Cathrach
County and City Management Association



ROADS Services Training Group

LOCAL AUTHORITY ROADS CONFERENCE and EXHIBITION - 2022

Radisson Blu Hotel & Spa, Sligo May 2022



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LOCAL AUTHORITY ROADS CONFERENCE and EXHIBITION – 2022

Pavement Works Checks, Key Points and Best Practice

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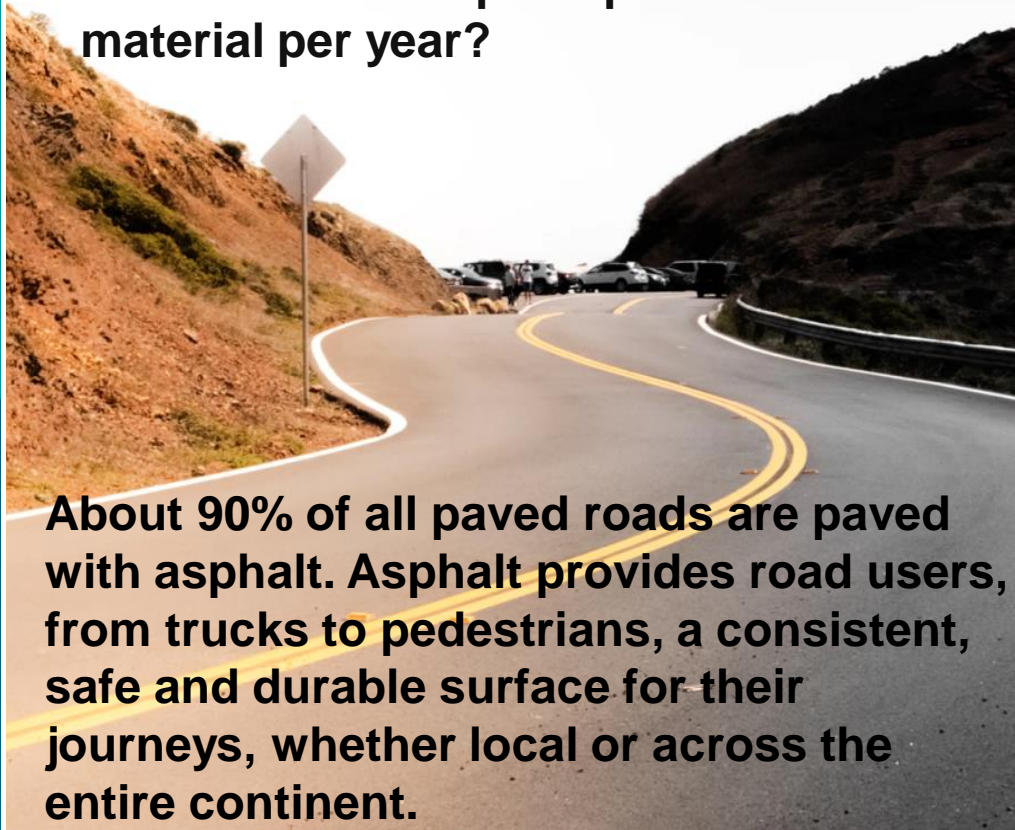
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In Europe there are more than 4.000 asphalt plants producing around 300 million tons of asphalt pavement material per year?



About 90% of all paved roads are paved with asphalt. Asphalt provides road users, from trucks to pedestrians, a consistent, safe and durable surface for their journeys, whether local or across the entire continent.

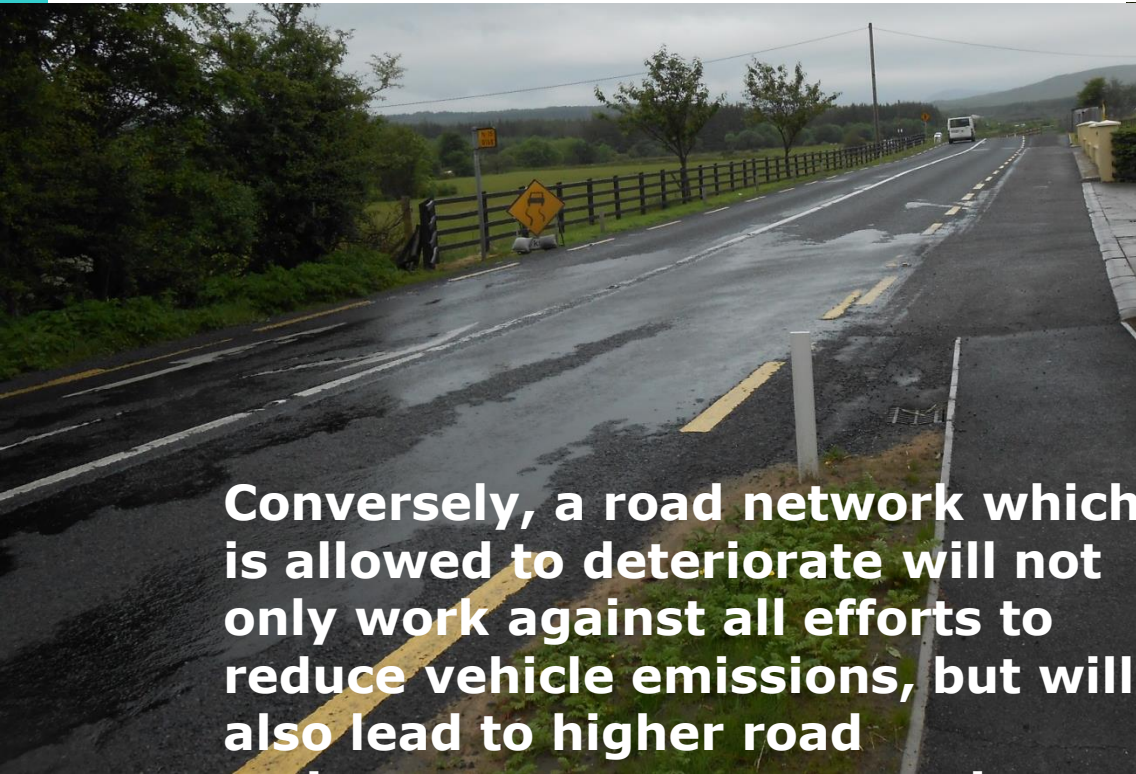




- ❑ Road transport contributes to about a fifth of the EU's total emissions of CO₂
- ❑ Smooth, well maintained road pavements will lead to the best performance of vehicles with regard to CO₂ emissions.
- ❑ Further benefits include:
 - better air quality (since emissions other than CO₂ will also be reduced proportionally),
 - noise reduction,
 - reduced vehicle maintenance costs and safer roads.
 - Total energy use will be reduced too, as we move towards renewable sources.
- ❑ Improved pavements reduce CO₂

Performance and Durability

Conversely, a road network which is allowed to deteriorate will not only work against all efforts to reduce vehicle emissions, but will also lead to higher road maintenance or reconstruction costs over the long term





| TII Publications Number | TII Publication Title | Set | Published |
|-------------------------|---|-----------|---------------|
| CC-PAV-04011 | Hot Rolled Asphalt and Coated Chippings – Checks and Key Points | Technical | January 2019 |
| CC-PAV-04013 | Surface Dressing – Checks and Key Points | Technical | March 2020 |
| CC-PAV-04014 | Stone Mastic Asphalt – Checks and Key Points | Technical | March 2020 |
| CC-PAV-04015 | Asphalt Concrete – Checks and Key Points | Technical | December 2020 |
| CC-PAV-04016 | Site Documentation and Traceability | Technical | April 2022 |
| CC-PAV-04017 | Sampling Storage and Retention | Technical | April 2022 |



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- ❑ The aim of the Series is

 - ❑ to provide Employer's Representatives with background information
 - ❑ to enhance the understanding of the written requirements of the specifications
 - ❑ to show examples of good practice and poor practice.
 - ❑ Specification references provided in order for the user to easily locate the actual specification requirement

 - ❑ The aim of the Series is not

 - ❑ a specification but should be read in conjunction with The Contract Specific
 - ❑ And does not purport to cover every aspect of Asphalt Concrete nor any legal interpretation of the Specification for Road Works.



1. Introduction
2. Checklist of Items required – Prior to commencing Works
3. Checklist of Items required – During and After Completion of the Works
4. Key Points – During and After Completion of the Works



**Prior to Commencing Design
(Surface Dressing Only)**

- ✓ Site Assessment
- ✓ Road Hardness
- ✓ Macrotexture
- ✓ Traffic Volume
- ✓ Traffic Speed
- ✓ Chippings
- ✓ Season

Prior to Commencing Works

- ✓ Type Testing
- ✓ Declaration of Performance
- ✓ CE Marking
- ✓ Constituents
- ✓ Product Composition
- ✓ Chippings (SD)
- ✓ Works Proposals

During and After Works

- ✓ Works Requirements
- ✓ Monitoring of Construction
- ✓ Sampling, Storage & Retention
- ✓ Site Documentation & Traceability





Example; Checklist of items required prior to commencing works:

| Item | Specification Reference | Task | Done ✓ |
|-----------------|----------------------------|--|-----------|
| CE Marking | CC-SPW-00900 Clause 5 | Review documentation for compliance with specified SMA mixture: | |
| | CC-SPW-00900 Table 7 | Constituents - Type testing, Declaration of Performance, CE Marking - CC-GSW-00900 Table NG1.2a | |
| | CC-SPW-00900 Table 8 | Product Composition - Type testing, Declaration of Performance, CE Marking - CC-GSW-00900 Table NG1.2a | |
| Works Proposals | CC-SPW-00900 Clause 10.1.2 | Contractor to submit works proposals to include: | |
| | | Laying and compaction plant – CC-SPW-00900 Clause 10.1.7 & 10.1.9 & 10.1.9.3 | |
| | | Working in different climatic conditions - CC-SPW-00900 Clause 10.1.5, 10.1.5.1 & CC-GSW-00900 NG 10.1.5 | |
| | | Formation of joints - CC-SPW-00900 Clause 10.1.8 & CC-GSW-00900 NG 10.1.8 | |
| | | Further reading CC-GSW-00900 Clause NGA 10 | |



Example Key Points:

- HRA Mixture
- Chip Condition & Size
- Macrotexture
- Rate of Spread
- Embedment
- Joints
- Weather
- Chip loss
- Ride quality

| Key point | Level | Example Photographs | | Specification References and notes |
|-------------|-------|---|--|---|
| HRA Mixture | Good |  |  | <p>The composition of the HRA mixture should be sufficiently robust to support the coated chippings and sufficiently malleable to hold the coated chippings in place.</p> <p>The manufacturing process can also play a significant role in the ability of the HRA mixture to support the coated chippings.</p> <p>The temperature of the HRA mixture should be within the limits contained in Tables 5 and 6 of CC-SPW-00900.</p> <p>Insulated transport is essential to minimise heat loss prior to use. CC-SPW-00900 Clause 10.1.3 stipulates the requirements for transport.</p> <p>Particularly wet or cold ambient conditions can affect the ability of the HRA mixture to support the coated chippings.</p> <p>Paver tamper settings can be altered to assist the process of supporting the coated chippings.</p> <p>Truck inspections on site should only take place if hopper material or screed indicates poor bearing capacity.</p> |
| | Poor |  |  | |



Example Key Points:


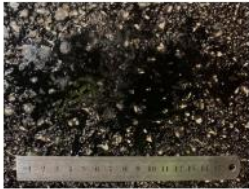




- Aggregates
- Design Checks
- Stockpile Management
- Binder Emulsion Storage
- Equipment
- Weather
- Substrate
- Installation
- Traffic Control & Aftercare
- Specific Issues

| Key point | Level | Example Photographs | | Specification References and notes |
|----------------------|----------------------------------|---------------------|-----------|---|
| Aggregates | Good shape Good size Clean | | | <p>CC-SPW-00900 Table 17 & Table 18</p> <p>The shape and size of the chippings influences the performance of the surface dressing.</p> <p>The measurement of Average Least Dimension (ALD) provides a better measure of shape as it takes size and Flakiness Index (FI) into account.</p> <p>The ALD is used in the analytical design method along with traffic volumes, macrotexture, hardness and days to first frost to determine the rate of application of binder and rate of spread of chippings.</p> <p>A desktop application for calculating ALD and undertaking an analytical design is available at: https://web.tii.ie/adt/#/pavement</p> <p>Access to the desktop application requires initial registration with TII.</p> |
| | Poor shape Good size Clean | | | |
| Aggregates continued | Poor shape Poor size | Clean | Dirty | |
| | Good shape Good size Dusty | | | |



Example Key Points

- SMA Mixture
- Surface Finish
- Transport
- Material Flow
- Preparation
- Bond to Substrate
- Macrotexture
- Joints
- Roundabouts
- Ironwork
- Weather
- Ride Quality
- Site Illumination

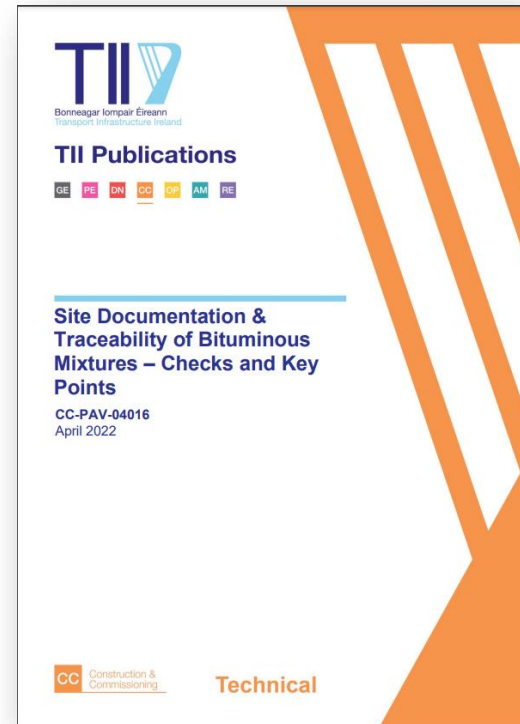
| Key point | Level | Example Photographs | | Specification References and notes |
|----------------|---|--|---|--|
| Surface finish | Variable |  |  | <p>The manufacturing process can also play a significant role in the ability of the SMA mixture to provide a consistent surface finish.</p> <p>The temperature of the SMA mixture should be within the limits contained in Tables 8 and 9 of CC-SPW-00900.</p> <p>Overheating can lead to binder drainage.</p> |
| | Binder Flushing | | | |
| | Good |  |  | |
| Consistent | | | | |
| Poor |  |  | <p>If the mixture temperature is too low, reduced cohesion occurs at the interface between the binder film and aggregate leading to excessive voids in the finished surface and subsequent loss of material.</p> <p>The surface finish is highly influenced by the mixture design.</p> <p>A well designed mixture produces a homogenous blend of components without segregation.</p> <p>A poorly designed mixture can produce an imbalance of components leading to segregation during placement.</p> | |
| Variable | | | | |



Site Documentation & Traceability of Bituminous Mixtures (CC-PAV-04016)

Overview / Purpose

- To improve the retention and availability of relevant documentation:
 - Product approval,
 - Works proposals,
 - Laying/as-built records,
 - Traceability of materials
 - Content of close out reports
- To ensure that in the event of a subsequent investigation, sufficient records are available.

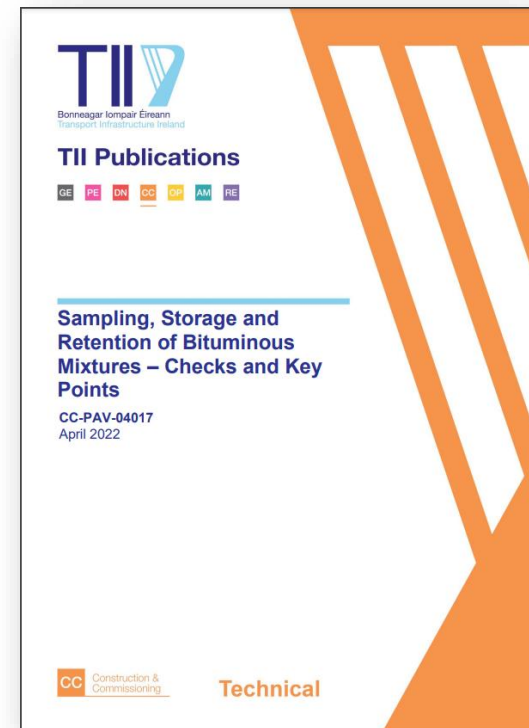




Sampling, Storage & Retention of Bituminous Mixtures (CC-PAV-04017)

Overview / Purpose

- Aims to improve the availability of reference samples for analysis and subsequent investigations.
- Outlines the required tasks for sampling, storage and retention of samples.
- Describes the Quality Control testing function
- How split samples may be used for compliance checks.
- Best practice for the storage of samples and retention methods
- Ensure ease of access of samples post-construction.





**“By 2050, we will need
three planet earths to meet our
resource demands in a business as
usual scenario”**

Waste Action Plan for a Circular Economy. 2020



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