

Federal Highway Administration Hot Topics

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Warm Mix Asphalt

Warm-Mix Asphalt (WMA) is the generic term for a variety of technologies that allow asphalt to be produced and then placed on the road at lower temperatures than the conventional hot-mix method.

WMA production is at temperatures ranging from 30 to 120 degrees lower than hot mix. In most cases, the lower temperatures result in significant cost savings and reduced greenhouse gas emissions because less fuel is required. WMA also has the potential to extend the construction season, allowing projects to be completed faster. By 2009, more than 40 States constructed WMA projects, with 14 adopting specifications to accommodate WMA.

Prefabricated Bridge Elements and Systems

With Prefabricated Bridge Elements and Systems (PBES), many time-consuming construction tasks no longer need to be done sequentially in work zones. An old bridge can be demolished while the new bridge elements are built at the same time off-site, then brought to the project location ready to erect.

Because PBES are usually fabricated under controlled climate conditions, weather has less impact on the quality, safety, and duration of the project. The use of PBES also offers cost savings in both small and large projects. The ability to rapidly install PBES on-site can reduce the environmental impact of bridge construction in environmentally sensitive areas.

Adaptive Signal Control Technology

Poor traffic signal timing contributes to traffic congestion and delay. Conventional signal systems use pre-programmed, daily signal timing schedules. Adaptive signal control technology adjusts the timing of red, yellow and green lights to ac-

commodate changing traffic patterns and ease traffic congestion. The main benefits of adaptive signal control technology over conventional signal systems are that it can:

- Continuously distribute green light time equitably for all traffic movements.
- Improve travel time reliability by progressively moving vehicles through green lights.
- Reduce congestion by creating smoother flow.
- Prolong the effectiveness of traffic signal timing.

Adaptive Control Software Lite (ACS-Lite) is an example of adaptive signal control technology. ACS-Lite was specifically designed to be deployed using conventional control equipment, communications, and traffic sensors on arterial streets, making it a cost-effective alternative to other signal timing adjustment technologies.

Geosynthetic Reinforced Soil

Instead of conventional bridge support technology, Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS) technology uses alternating layers of compacted granular fill material and fabric sheets of geotextile reinforcement to provide support for the bridge. GRS also provides a smooth transition from the bridge onto the roadway, and alleviates the “bump at the bridge” problem caused by uneven settlement between the bridge and approaching roadway. The technology offers unique advantages in the construction of small bridges, including:

- Reduced construction time and cost, with costs reduced 25 to 60 percent from conventional construction methods.
- Easy to build with common equipment and materials and easy to maintain because of fewer parts.
- Flexible design that is easily modified in the field for unforeseen site conditions, including unfavorable weather conditions.