Burbank-Second Avenue-Compacted Concrete Pavement (CCP)

Burbank, WA (Walla Walla County/Port of Walla Walla)

The deterioration of America's infrastructure is severely challenging both new construction and maintenance of existing roads in our region. The constant struggle to address both first cost and life cycle cost demands that new pavement technology be developed and implemented. Compacted Concrete Pavement (CCP) is such a technology. While Roller Compacted Concrete (RCC) has been utilized since the 1970's it has predominantly been utilized for log yards and spillway structures but unable to serve our roadway infrastructure. CCP is a next generation application of this process that will allow for economical road construction while also offering extended Life Cycle similar to traditional concrete pavements.

The project required a total reconstruction of the failed asphalt pavement on the primary arterial into the Port of Walla Walla. Existing asphalt and base material was pulverized and recycled *utilizing cement treated base*. Concrete curb and gutter was constructed followed by construction of the Compacted Concrete Pavement (CCP). An on-site pug mill was erected for CCP to be constructed with a high density asphalt paver for placement, grading and compaction. Unlike any other exterior pavement, the surface of the pavement was troweled with Whiteman Hydrostatic riding trowels (typical of interior slabs) during application of the ACEiT Blue surface treatment. This allowed zero slump materials to create a dense paste for final finishing immediately after troweling. The surface is extremely dense and impermeable to water, ice and other environmental attacks. Upon applying the final tine finish, the surface was cured in a typical pavement procedure. Due to extremely low shrinkage, saw-cutting was not required, nor were dowels and load transfer devices required. To mirror a concrete pavement finish saw-cuts were installed but not necessary.

The Second Avenue-Burbank project is the first CCP prototype arterial construction in the United States. Utilizing proprietary additives in the project mix design coupled with a proprietary surface enhancement, CCP was used for this 5,000 square yard road reconstruction. It is the first project to enhance RCC basic products and provide for a structurally sound roadway that has the same finish and surface characteristics of traditional concrete pavement. ACEiT Blue additives and surface application allow for final finishing (tine) of the pavement surface. Freeze thaw resistance and surface durability mirror the performance of traditional concrete while also offering reduction in first cost. Ultimately this process will be first cost competitive with comparable asphalt and concrete sections while overcoming potholes, surface rutting and associated maintenance and life cycle costs.

Logistics for this project exemplify speed of construction with the 32' x 450' roadway placed and finished in one day. The product achieved 98% density and strengths of 5700 psi in two days. Completed on Friday afternoon, the roadway was opened to heavy truck traffic on Monday morning.

Compacted Concrete Pavement (CCP) is a next generation pavement technology that will meet both the economics and performance demands of our infrastructure roadways. CCP is a product meeting economic pressures, life cycle advantages and addressing all the advantages of conventional concrete pavements.