C³
Chaney Compacted Concrete

Concrete placed with asphalt equipment delivers concrete quality at better than asphalt prices.

ChaneyEnterprises.com/RollerCompactedConcrete
Concrete Quality at Better Than Asphalt Prices

C³ (Chaney Compacted Concrete) is Chaney Enterprises’ Roller Compacted Concrete (RCC) paving mix which has been specially formulated and optimized for strength and mix stability.

C³ has the same ingredients as conventional concrete but is pre-mixed at the plant then shipped in a dump truck and placed with equipment common to the asphalt industry at a costs savings as much as 10%.

Roller compacted concrete shares both properties of asphalt and concrete so it truly represents the best of both worlds delivering short and long-term value.

The appearance is very similar to the open graded look of asphalt, only it has a much lighter color that reduces the urban heat effect and decreases lighting needs by 30%.

Lowest Initial Cost

For most applications, C³ will be the lowest initial cost of all paving options. Cost advantages will be most apparent when compared to single-lift asphalt pavements greater than 3” or any two-lift asphalt pavements. Initial cost comparisons will vary widely depending on many factors, but the cost savings will generally be between 0% and 10%.

Cost Summary

Initial versus Lifecycle Costs for an average Commercial Parking Lot

- Maintenance Costs
- Initial Costs

<table>
<thead>
<tr>
<th></th>
<th>Typical Asphalt Design</th>
<th>Traditional Concrete Paving</th>
<th>RCC Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Costs</td>
<td>$50</td>
<td>$100</td>
<td>$0</td>
</tr>
<tr>
<td>Maintenance</td>
<td>$250</td>
<td>$150</td>
<td>$200</td>
</tr>
</tbody>
</table>

Asphalt
- Fast
- Cheap
- Easy

Concrete
- Strong
- Durable
- Green
Lifecycle Cost

While the initial cost of C³ is appealing, the real cost savings is in the long-term lifecycle:

- **Lighting**
  Concrete’s lighter and more reflective surface decreases lighting energy up to 30%—a savings the owner can keep for the life of the project.

- **Less Maintenance**
  Traditional concrete is known for its resilience and durability, but C³, is more durable than even traditional concrete. This translates into less maintenance and a paving surface that can last decades longer. By eliminating the need to perpetually resurface with asphalt, owners will not be subjected to future asphalt price increases.

- **Air Conditioning**
  The cooler, more reflective pavement decreases ambient temperatures by about 7 to 10 degrees, which slashes peak loads during hot summer days.

Uses

C³ is extremely versatile and can be used in a number of ways for parking lots, industrial yards and roads depending on the project and goals of the owner.

- **Full Depth Pavement**
  By far, the least expensive application is to place C³ directly on the subgrade and use it as your final surface.

- **Asphalt Base Course**
  A full asphalt solution frequently requires an aggregate sub base for support, with an asphalt base course, then a final topping surface course. C³ can replace both the aggregate base and base course of asphalt.

- **Asphalt Overlays**
  Old, crumbling asphalt in need of repair can be resurfaced with C³.
Construction, Placement & Compaction

Construction of roller compacted concrete pavements is more similar to asphalt than it is to traditional concrete. Our mix is optimally designed for compaction and stability. It is pre-mixed at our plant and can travel up to 45 minutes to the job site in a normal dump truck.

Placement can be done in a variety of methods ranging from graders to conventional asphalt pavers to high density pavers. The difference is in the initial compaction of the material. The better the initial compaction, the more uniform the surface will be. Small asphalt pavers will achieve an initial compaction of about 80% to 85% and will typically require two to three passes with a properly weighted roller. A high density paver may achieve more than 95% initial density and may or may not require additional roller compaction. C³ should be rolled until 96% compaction or better is achieved.

Once compaction is achieved, a quality curing compound MUST be applied such as Thinfilm 445 which is available at our ChaneyStore.com.

Cracking occurs in all concrete. Joints direct cracking in a more aesthetically pleasing way. While joints are always optional, in C³ they are less needed. Cracking occurs at a greatly reduced rate and it is perfectly acceptable in some cases to let the C³ crack naturally. If joints are desired, they should be cut with an early entry saw at about half the rate of traditional concrete. For example, for 4.5 inches of C³, the maximum joint spacing could be as much as 18’ to 20’.

While a 24 hour curing period is always recommended, once compaction is achieved, the pavement maybe immediately opened to limited, light traffic.
## Design & Specification

There is a great deal of design help available for engineers. The National Ready Mix Concrete Association offers a Design Assistance Program (DAP) that is free if submitted through an association member such as Chaney Enterprises.

For parking lots, ACI 330.1-03, Specification for Unreinforced Concrete Parking Lots contains design charts to easily identify the section thickness. For road design, the American Concrete Pavement Association has made design software available called StreetPave available at: www.acpa.org/streetpave

Compressive strengths come in a wide range, but are typically between 4,000 to 10,000 psi and most commonly in the 5,000 to 7,000 psi range.

## Surface Finishing Options

<table>
<thead>
<tr>
<th>Cost</th>
<th>Description</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>No finish</td>
<td>By far the least expensive option for C³ surface is to not do any enhancements.</td>
</tr>
<tr>
<td>$$</td>
<td>Diamond grinding</td>
<td>This is more optimal for higher speed applications where ride quality is an issue.</td>
</tr>
<tr>
<td>$$$</td>
<td>Broom finish</td>
<td>C³ can use chemical admixtures to allow for a broom finish similar to a traditional sidewalk.</td>
</tr>
<tr>
<td>$$$$</td>
<td>Asphalt topping</td>
<td>A thin layer of surface asphalt can be applied. With a sturdier base, the life of the asphalt will be extended.</td>
</tr>
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</table>

## Maintenance

While C3 is more durable and will likely require less maintenance than conventional concrete, when maintenance issues do arise, the fix is typically the same. Patching and repairing can be done with either conventional concrete or C3.
Case Studies

There are many examples nationally and regional of Roller Compacted Concrete (RCC). Here are just a few in our region.

**Sycamore Street** (Local Road) *Upper Nazareth Township, PA*

The existing asphalt road required reconstruction. The projected costs for the asphalt reconstruction were between $99,000 and $116,000 for 1,728 square yards. The contractor proposed using RCC as the base for an asphalt topping. The final price was about $70,000 for a 30% to 40% cost savings.

**C. Steinweg Group** (Warehouse) *Baltimore, MD*

When C. Steinweg Group acquired a contract to store feed grain, the contract prohibited the storage of the organic feed on an asphalt surface. RCC was the most economical and durable solution to handle the heavy equipment. At the end of the job, the 30,000 square foot warehouse facility passed inspection, received a long lasting durable solution and met a very tight project deadline.

**Staffordboro Boulevard Park & Ride** (Parking Lot) *Stafford, VA*

This pilot project for VDOT included complete reconstruction of the parking lot and small section of the northbound lanes on Staffordboro Boulevard. The RCC was placed and then covered with a thin layer of asphalt. VDOT deemed this a successful project and has continued to contract projects around the state.
**Riddle Mine Site** (Private Industrial Road)
*Harwood, MD*

The roadway into the sand and gravel mining operation supports about 300 to 400 trucks loaded with aggregates each day. After years of abuse, the asphalt road could not hold up under the traffic strains. To complicate matters, this busy location operates six days a week and the one and only entrance road could not be out of commission for an extended period. RCC was the most cost effective solution and was open to heavy traffic within 36 hours.

**King George High School** (Pathway)
*King George, VA*

After a medical emergency on the athletic fields, quick response vehicles were unable to navigate the soft ground of the dirt road leading to the playing fields. To ensure the safety of future student athletes, the school needed an inexpensive, quick, and durable paving solution. The entire 400 foot long path was paved in under two hours, open to emergency traffic immediately and general traffic the next morning.

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**Questions?**

Contact our C³ Tech Team

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