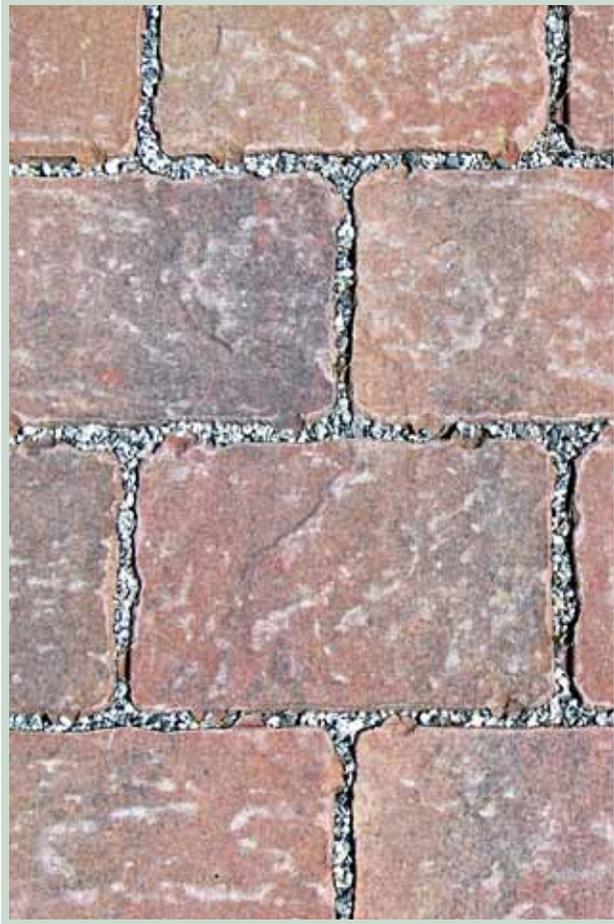


WHY PAVERS?

CASE
STUDY



COMMUNITY CENTER PARKING LOT – CITY OF BENICIA



Calstone Permeable Pavers Provide Functional Aesthetic for New Community Center

The City of Benicia recently completed the construction of a new community center. The project was the result of a study done to come up with the highest and best reuse for a closed elementary school. The school's existing asphalt playground area was to become the Community Center's new parking lot.

The initial design for new parking lot did not include a Permeable Interlocking Concrete Pavement (PICP) system. New asphalt with re-stripping was the original plan. Through design involvement, a stormwater quality system was designed into the parking spaces of the parking lot. This plan also allowed for additional parking. A concrete grass cell idea was proposed, but eliminated due to city concerns of irrigation and maintenance. Rod Sherry of Cullen-Sherry & Associates in Benicia, the civil engineer on the project and instrumental during the decision making process, stated "I wasn't sure the grass would hold up to the daily use this parking lot would see and the grass would not be good during the wet season". Mr. Sherry said they decided on permeable pavers because of the water detention/treatment, all weather surface and look". He continued with why permeable pavers were chosen: "I was looking for a way to make the parking lot look nice, give it a bit of a historic look and provide storm water detention. The pavers met all those needs". Rick Knight of the City of Benicia, referring to the permeable pavers, added "we wanted no standing water when it rained", making permeable pavers an excellent choice for the new Community Center parking lot.

In talking further with Mr. Sherry he explained why he used Calstone permeable pavers. Through internet research and eventually ending up on the Calstone website, Mr. Sherry said he was able to easily navigate the site and found a lot of useful information he could use for making the permeable paver decision. He mentioned the Calstone Representative, John Spanne, was easy to reach , and eager to meet with sample pavers in different colors for the city to review. He also stated that Calstone was a local company which weighs in heavily on LEED projects.

Eventually the Calstone Quarry Stone 6x9 style was chosen in the Sunset Terracotta color.



White Quarry Stone permeable pavers were used for the parking stripes. White paint was not wanted on the pavers.

In the PICP detail, a no exfiltration design was utilized. In this design, an impermeable liner was used, between the open-graded aggregate base and the native soil subgrade. The civil engineer explained that in the City of Benicia, they have a shallow hardpan (sandstone) and expansive clay. An impermeable membrane was designed in to create an underground detention system. Mr. Sherry explained “the system is designed to act much like a big bathtub. The stormwater is collected below the pavers and drained slowly to the Public Storm Drain System through a system of sub-drains.”

The staff involved with the project for the City of Benicia complimented the PICP and thought the colorful concrete pavers on top of the detention system would look very nice. They did express some concern about the cost (of the pavers) being much more than regular concrete or asphalt. This is a major misconception. Initially, comparing pavers to regular concrete or asphalt, there is an added expense. However, typically the thought process stops there and doesn't take in to consideration all of the added costs of the entire stormwater management/ detention system, or over time, the less than appealing site of gray cracked concrete that needs repairing or the cost of on-going maintenance and eventual replacement of deteriorated asphalt. Lifecycle costs for a PICP system, which includes the permeable pavers, have proven to be comparable to a typical stormwater detention system with the use of concrete or asphalt in the hardscape area. When the installation of the PICP system was complete, everyone had nothing but compliments on the look of the new Community Center parking lot. Mr. Sherry believes the pavers give the parking lot a classy almost park-like look to it.

The issue of maintenance is an area of importance that is understood by the City of Benicia. Permeable pavers over time, do collect silt, sediment and debris in the joints. Because the joints are where the stormwater drains down into the detention area, these joints need periodic cleaning. It is recommended that at least once a year, these joints be vacuumed, to suck up everything that's been collecting between the pavers. A vacuum truck is most commonly used and the City of Benicia is fully aware of this requirement to maintaining a fully functioning PICP system. They had some concern about having to import and spread the aggregate joint material, if any of this material was picked up during the vacuuming process. This need not be



a concern. The joint material is readily available and the strong interlock of the small angular joint aggregate, locks tightly in place, reducing the amount of loose aggregate particles picked up during vacuuming. It's an easy process to rechip any joint areas.

The conversion of the elementary school into a community center, offered the City an opportunity to employ “green” materials. Because the Benicia Community Center project was primarily interior tenant improvements, much of the “green” potential, rested in the application of certain materials. The architect Noll & Tam in Berkeley, was directed to look for “green” materials for this project. They also worked to commission a LEED consultant to determine the feasibility and applicability of this project achieving a level of LEED certification. Calstone permeable pavers can help this project achieve LEED credits and push towards LEED certification through the LEED categories of Sustainable Sites (Storm Water Design Quality Control and Heat Island Effect) and Materials and Resources (Construction Waste Management, Materials Reuse, Recycled Content and Regional Materials).

With the success of the PICP system for the Community Center Parking Lot, the City of Benicia decided to replicate the concept for another city project, the upcoming Benicia City Hall Parking Lot renovation. With the same goals in mind, to decrease the existing site's surface water runoff and increase filtering of parking lot contaminants, Calstone permeable pavers were again chosen to be installed as part of the PICP system. Carrying over the design theme, especially the look of the Community Center site was of extreme importance to the city. Both projects are in the beautiful Historic Downtown of Benicia and only a block away from each other. Mr. Sherry emphasized “the look of the parking lots will help to visually tie the two facilities together. These parking lot sections were designed again by Cullen-Sherry & Associates using the methodology, standards and formulas from the Interlocking Concrete Pavement Institute's Manual for PICP systems.

The collaboration of Noll & Tam Architects in Berkeley, Cullen-Sherry & Associates Civil Engineer in Benicia, the City of Benicia and the permeable paver contractor, European Paving Designs in San Jose, has made the project a major success for the City of Benicia.

Additional Photos

