Quartz Hill Storm Drain Project

For City of Lancaster Utilizes Cold Central Plant Recycling and Soil Cement Treatment from Pavement Recycling Systems

Written by: Brian Hoover

The 3,450 households and the residents that reside within the unincorporated community of Quartz Hill are finally getting a new underground storm drain system along 50th Street W between Avenue K and Avenue M-8. This is cause for celebration, as the local populace has witnessed and endured severe flooding and other significant disruptions when it has rained in the past. In addition to approximately 2 miles of new 84” concrete storm drain, this $15.8 million project will also feature road improvements that extend from Avenue K through the downtown area of Quartz Hill.

Proper drainage has been an issue for many years in Quartz Hill and the LA County Public Works Department has previously implemented various methods and techniques that included the construction of retention basins within the residential neighborhoods. None of the methods fully relieved flooding issues, so LA County’s Department of Public Works has made it their mission to design a solution that will permanently drain water off the streets and roads that are subject to flooding. This new drainage system and the road improvements will be built at no added tax or assessments to the property owners thanks to County Supervisor Antonovich. The project began back in January of 2012 and is scheduled for completion sometime later this year. An additional mile of lateral storm drainpipe will connect into the main 84” reinforced concrete storm drain. The entire new system will then connect to the City of Lancaster’s existing 96” underground storm drain line located at Avenue K.

The construction of the new storm drain will be closely followed by a road repair project, which consists of the resurfacing and reconstruction of roads that are in poor condition. Additionally, it was necessary to remove portions of road where storm drain excavation occurred. The original plan was to mill the existing asphalt and then install an asphalt cap on top. However, during the excavation process it was discovered that the existing pavement was too thin to mill. Also the road area in question is located in a rural type setting and most of the asphalt road area was constructed directly over native soil and without the use of base material. The Project Management Division, which is overseeing the project, contacted the Geotechnical and Materials Engineering Division (GMED) and requested a cost effective alternate plan that would deal with this new issue at hand. Through coring and analysis of the existing subgrade, it was proposed that cement treatment be used on 8-inches of soil below the existing asphalt as a structural substitute for base material. Additionally, the Engineering Division suggested that the full width of the entire 2 mile section of asphalt be milled out, stockpiled, processed with an engineered emulsion and then put back down for use as an asphalt base course over the soil cement treated soil. This solution is known as Cold...
Central Plant Recycling. Pavement Recycling Systems out of Jurupa Valley, California has been at the forefront of the development of this process for many years.

Pavement Recycling Systems was chosen to perform both the soil cement treatment and the Cold Central Plant Recycling at the Quartz Hill project. Soil cement is a simple, highly compacted mixture of soil, Portland cement and water. The mixture gains strength as it hydrates thus improving the engineering properties of the raw soil. Stabilized pavement bases such as soil cement have provided foundations for more than 70 years and are considered an excellent alternative to other sub base materials. On this project, the process was completed in-place using cement distributors and road reclaimers reducing the construction schedule and minimizing the inconvenience to the community.

Cold-mix asphalt recycling is defined as an environmentally friendly process in which reclaimed asphalt pavement (RAP) materials are combined with new asphalt and/or recycling agents to produce cold base mixtures. The term “cold-mix recycling” generally refers to central plant mixing and is done without application of heat.

Cold-mix asphalt recycling has been used to correct pavement distress that involves both surface and base course asphalt pavement. In this particular case, on the Quartz Hill project, Pavement Recycling Systems began by milling off the existing asphalt pavement and moved the material to a central location where it was stockpiled. The material was then crushed and mixed with an engineered emulsion. Next, the recycled asphalt material was hauled back to the job site where it was reapplied and compacted through conventional asphalt paving methods, and then finally a new 1 ½” rubberized hot mix asphalt wear cap was applied. This process, along with Cold In-place Recycling will be used on all of the affected road sections on this project before completion later this year.

Greg Johnson is the Materials Lab Supervisor for the LA County Public Works Department and he explains, “Coming up with this pavement solution and design was a fairly easy decision once we weighed the options and realized that it was both a durable long lasting solution, as well as being the most cost effective. Additionally, these processes provided for full width reconstruction of the road, as compared to replacement of the pavement solely where the storm drain excavation had occurred and reduced construction time by several days; giving us a better road and minimizing...
the impact on our residents and businesses. We will continue to work with Pavement Recycling Systems on the third and final phase of this project, with the continued use of the soil cement treatment, Cold Central Plant Recycling and the addition of another solution known as Cold In-place Recycling.”

Cold In-place Recycling (CIR) involves the use of a “train” of equipment. The first piece of the train is a milling machine that grinds off the pavement to be recycled. Next, the material travels up a conveyor belt to the actual recycling unit. From here, the material is separated by a screener, crushed and finally mixed with an emulsion. The new CIR product is then loaded into the paving machine and laid down as a new recycled asphalt pavement surface.

The County has moved forward in implementing sustainable practices and innovative solutions like the ones used on the Quartz Hill Storm Drain Project are being utilized across the country and have proven time and time again to be an excellent alternative to full remove and replace and other more expensive methods. Along with these recycling strategies, the County is balancing the needs and concerns of its constituents with those of our infrastructure and our environment.

Gregg Begell is the Project Manager and is overseeing the entire Quartz Hill Storm Drain Project. Gregg comments, “This represents the first project where I have used the Soil Cement Treatment and Cold Central Plant Recycling methods. Anyone would be apprehensive about using any sort of new system, however as an additional challenge the decision to use this method was made in the middle of the project and just weeks before the paving was scheduled to commence. Pavement Recycling teamed up with our contractor, H & H General Contractors, to get the work done within our already tight schedule. I was impressed at just how smoothly the whole operation was performed. Other than than the recycled asphalt being warm to the touch versus conventional hot mix asphalt, which is searing hot, it looked and performed like a typical paving operation. You hear a lot of stories about new products being as good or better for less cost, but they seldom work in practice. Well Pavement Recycling System’s products and methods delivered as promised. When it first became evident that resurfacing would not be feasible, the only other option seemed to be to completely reconstruct that portion of pavement in question. This would have added hundreds of thousands of dollars to the project, dollars that weren’t in the budget. By eliminating both the resurfacing and reconstruction and performing all of the paving utilizing the soil cement and recycled asphalt, we were able to fit the work in the project’s original budget. We are now preparing to start the final phase of the paving project and in addition to the Soil Cement Treatment and Cold Central Plant Recycling, a portion of the remaining pavement will utilize the Cold In-place Recycling application. I’m looking forward to completing our paving operation with these new methods.

For more information the Quartz Hill Storm Drain job or other LA County projects, please visit www.dpw.lacounty.gov. For more information on Pavement Recycling Systems and their full line of pavement solutions, please call 951-682-1091 or visit them online at www.pavementrecycling.com