
MEMORANDUM

To: City of McGregor
Attn: Kevin Evans, City Manager
From: George E. "Jed" Walker, Jr., PE
Project Name: Public Works Assistance
Project No.: 3-00467
Re: Crushed Rock Aggregate used on City Streets
Date: December 14, 2020

We understand that there is some public concern regarding the City's on-going street rehabilitation program. Specifically, there has been criticism regarding the rock aggregate being used in the seal coat (chip seal) "wearing" surface course that is being placed. The complaints that we are aware of include the following:

1. The native limestone rock that is being crushed specifically for the City is "not hard enough to be used as the wear layer in the 'chip seal' road building operation."
2. The older streets in town use a harder stone (pea gravel) for the wearing surface. The pea gravel has been suggested by certain citizens as the preferred wearing surface aggregate within the chip seal.
3. The native crushed stone is "pulverizing to dust" by light vehicular traffic.
4. The native crushed rock wearing surface is intended for a thicker asphaltic paved surface course.
5. The current street repair program is a "complete waste of money."

While some of these complaints and criticisms may have merit and may be supported by traditional engineering practices, one must look at the goals and objectives of the street rehabilitation program as a whole, not individual components or methodologies, and then judge the entire program as to whether or not it adds value to the quality of life to the City's citizens and protects the public's safety. Therefore, let's restate the City's goals and objectives, and then address each complaint (listed above) accordingly.

The City's street rehabilitation goal is to establish a street reconstruction program that is responsible, affordable, and sustainable and provides the best return on investment for the citizens of McGregor. The City's objectives to meet this goal are to self-perform the work and to utilize recycled materials where possible. A summary of the City's program is outlined below:

1. City forces are responsible for preparing the subgrade and base for each street being reconstructed. The base material used for this operation is crushed limestone base and/or recycled crushed concrete, all of which is crushed and sieved to a proper gradation at the local rock crushing plant located at the Wastewater Treatment Plant.
2. In order to maximize the most miles of streets reconstructed per dollar, the surface course selected for the program is a "two course seal coat" which can be referred to as a two-layer chip seal. This type of surface can be applied by City work crews and is a very good mid-range surface course that is part of a long-range program. After approximately 8 to 10 years, another seal coat or asphaltic surface course will need to be applied; however, in the meantime the base is protected and structurally functional with the "two course seal coat." Further, the McLennan Road and Bridge Department utilizes a similar wearing surface for its road reconstruction program.
3. In order to minimize dust and enhance aesthetics, the City will apply a "fog" seal to the finished surface in order to further adhere the aggregate (rock) and to provide a uniform, appealing black surface. A fog seal is a diluted asphalt emulsion (mixed with water) that is sprayed on the street surface.

The person or persons posting the complaints regarding the means, methods, and materials utilized in the City's street rehabilitation program appears to have a background in road construction and the materials used therein. Respectfully, we welcome the opportunity to meet and discuss the merits and shortcomings of the City's program to better understand their concerns and complaints and for us to better articulate the City's means, methods, practices, and principles. We will, however, address each concern/complaint in the order outlined in the opening paragraph of this memorandum as summarized below:

1. The native limestone rock in the vicinity of McGregor is very hard and is a good local material for street building purposes. While this native rock probably does not meet the Texas Highway Department's specifications for hardness, it has proven to have the soundness and hardness suitable for City streets. We must be cognizant that the Highway Department's specification for chip seal aggregate is well-suited for highways and major arterial thoroughfares, it is also very expensive and may not be necessary for use on local streets.
2. While the older streets in McGregor utilized pea gravel for the aggregate in the chip seal wearing surface, pea gravel is neither preferred nor desired for local streets and is not used by the Highway Department or the City of Waco because of its negative qualities for use as a road building material. True, pea gravel is very hard. So hard, in fact, that the asphalt component of the chip seal can hardly penetrate, or absorb, into the pea gravel, and therefore does not adhere well or bond properly. This condition results in large quantities of loose surface aggregate (pea gravel) that offers very low skid resistance, especially when wet, and is not aesthetically pleasing.
3. We are not aware of the native crushed stone "pulverizing to dust" by light vehicular traffic. Further investigation of this complaint is required before rendering an opinion. The streets that we (Walker Partners) have observed displayed no signs of aggregate breaking down into dust.
4. The native crushed rock chip seal is not intended nor dependent on a thicker hot-mixed asphaltic concrete surface course; rather, it is phase one of a street program whereby it will protect the base material and provide a safe driving course for an 8 to 10 year period, at which time routine and periodic maintenance will be expected.

December 14, 2020

5. We are not of the opinion that the street rehabilitation program is a complete waste of money. Conversely, we are of the opinion that the City's program is fiscally responsible, sustainable, and engineeringly sound. While the program is not perfect, and will probably need some tweaking in the future, it provides the safety and quality of life in McGregor that the citizens deserve at a cost that is financially responsible.