

**ROAD CONCERNS - CORE SAMPLES**

1. At the April 5, 2010 City Council meeting both Mayor Hanks and Public Works Director, Robert Ellis assured the council that there are measures in place to prevent something like Big Sky from happening. There is quality control on our roads through core samples. Poor core samples lead to extended warranty or work redone. This information was provided to the City Council and this is what they are using to make budget decisions as well as other road decisions.
2. When I called Robert Ellis and asked about the program's success I was told that the core samples were bad initially but they improved after the contractors knew they were being checked. He noted that some roads came in well above specs.
3. When I requested to look at the core sample reports I was informed that they are not available on-line and that I would need to come in to look at them. I took time off work to do so and viewed the paper information.
4. There were a number of core samples done prior to 2008. There were very few core samples done from 2008 on. When I asked about this I was told it was related to a reduction in the budget.
5. Some of the core sample results were disturbing. The lack of core samples since 2007 was a significant concern as it was considered a quality control preventive measure.
6. Other core sample concerns involved soil plasticity. Also, some roads exceeded the maximum lift recommended.

Examples – both good and bad:

Road Name	What Plan Called For	What Core Sample Said
Sophia Drive	6" on 6"	3.43" on 4.4"
Carriage Hills Drive	5" on 6"	6.23" on 8.8"
North 11 <sup>th</sup> (Founders Park)	5" on 8"	6.0" on 13.0"
Philadelphia St. bypass	5" on 8"	5.35" on 4.4" (high plasticity soil)
Cheyenne Blvd.	6" on 14"	6.49" on 9.0" (high plasticity soil)
Creek Drive	6" on 12"	5.8" on 0.0"
Marlin Drive	6" on 10"	5.8" on 0.0"
Derringer Road	5" on 6"	4.1" on 7.9" (medium plasticity soil)

**From April 5, 2010 City Council Meeting – regarding Big Sky - (3:50:00 on video):**

**Robert Ellis:** “The sub base out there is causing the problem. So whatever you put down, whether you mill it, overlay it, patch it, it’s going to fail. It’s not going to last—you’re really wasting your money. Some of those streets are outside city limits—that would be another issue. I can tell you it doesn’t matter what you do out there to fix the problem, you’ve got to remove everything and dig down a couple of feet and get all the bad soils that are out there, or else you’re just going to waste money trying to put something on the surface. And it’ll be expensive—we’re talking hundreds of thousands of dollars...tens of thousands of dollars.”

**Mayor Hanks:** “Robert, Can you address one thing Deb [Hadcock] brought up? And that was what we are doing to make sure it doesn’t happen again. Can you talk about our basically the *increase* in the testing we’re doing now?”

**Robert Ellis:** “We do in fact, I think we just awarded this a few weeks ago, we have a quality assurance, quality control contract—\$25,000 per year—where we go out and take borings of asphalt...to make sure they’re the proper thickness, also we do soil bores to make sure we’re getting the proper gravel thickness and compaction. So we do have some quality assurance, quality control measures in place...and it’s just to keep everybody honest. We also have inspectors—the growth management department has inspectors that go out routinely to inspect sub-division improvements. But something that came along a few years ago was a two year warranty. We used to have a one year, and quite honestly, you can build something and take the chance that it won’t show up in a year. When you’re talking soils, it usually takes longer than a year for major problems to become evident. And so we do now have in place a two year warranty period where they are required to hold bond or some type of surety on that so two years later we can come out and see if anything has failed and require them to fix it. I think that was something, a major improvement that Rapid City instituted that many other communities are still with the one-year. It has been a great improvement.”

**Mayor Hanks:** “Marcia, talk about the fact that we also require the warranty bonds now.”

**Marcia Elkins:** “Correct. Before we will accept a road and take it on our system they have to post the surety for the two year period. At the time we’re ready to accept those roads there’s an inspection. We’re doing that a joint inspection of Public Works and Growth Management. Public Works staff follows up at the end of the two year period. Again, we do a joint inspection to determine if there are improvements or things that need

Ron Sasso

to be revised because of the wear or unacceptable conditions at the end of that two year period.

**Ron Weifenbach:** I understand that process was in place when Big Sky happened....they never accepted the roads but never cashed the bond. What's the process?

**Marcia Elkins:** It was explained to me when this came to Growth Management from the Public Works Department in the '04, '05 time frame, was that the final projects were not finally inspected. Numerous projects were never accepted by the city they just kind of faded away. One of the engineers who was involved at the time the three years he worked for the city he told me that he only did final inspections on three subdivisions out of tens. When we took it over we tried to set up a routine process to check those things.

---

**Ron Weifenbach:** Again, when you test the road and it's insufficient--what's the process?

---

**Marcia Elkins:** Again, if we're out there and doing testing and a project's ready to be accepted, we may make them go out and pull out the asphalt in that section. There are sections of asphalt that have had to be removed before we would accept it and they had to go back in and re-compact and deal with those issues. They may have to replace curbing, depending on what the specifics of that. We're often putting it back on them to tell us what they think the solution is and have their engineer identify the design solution and staff will review it. We will not accept that project and will not put it into warranty until it has been inspected by public works and growth management together to say that it meets our standards.

**Ron Weifenbach:** Is that whole process on an excel spreadsheet?

**Marcia Elkins:** The developer is either contacted by our staff or they're wanting to close one out and we schedule final inspections. There's no tracking mechanism.

---

The next page contains information from Section 31, "Asphalt Concrete – General" section of the city's "Standard Specifications for Public Works Construction – 2007 Edition"

J. Density Tests/Frequency

The Contractor shall submit the following test data for each class of asphalt concrete:

One (1) Standard Density at the start of work and each time the mix or source of material is changed;

One (1) in-place, non-destructive (nuclear gauge) density test per day per 200 ton lot of mainline paving mix;

One (1) in-place, non-destructive (nuclear gauge) density test per day per 250 square yards of patching.

These tests will not be paid for directly, but shall be understood to be subsidiary work pertaining to the several classes of asphalt concrete, except when there is a bid item for asphalt compaction testing, per each test included in the Bidder's Proposal or as otherwise specified in the detailed specifications.

In addition to this testing, the Contractor may be required to remove and test in-place asphalt concrete to determine field densities by sawing or coring samples from areas to be determined by the Engineer.

These field asphalt core density tests will be measured in accordance with Section 31.4C - Compaction Samples and paid for in accordance with Section 31.5C.

All sampling and testing shall be done by certified testing laboratory personnel, and all test results shall be submitted to the Engineer.

Failing density tests shall result in an adjustment of the warranty period and the contract unit price in accordance with the following table for all classes of asphalt concrete:

Amount of Deviation:	0% to -1%	-1% to -2%	-2% to -3%	-3% to -4%
Amount of Deduction:	0% to 5%	5% to 10%	10% to 20%	20% to 30%
Additional Warranty Period:	1 year	2 years	3 years	4 years

Note: The amount of deviation shall be the difference between the specified density and the average of all densities for that class of asphalt concrete if this average is less than the specified density.

The City reserves the right to order additional tests. The Contractor shall pay for those additional tests that fail to meet specified density, and the City will pay for those additional tests that do meet the specified density.

**Recommendations:**

1. Investigate the core sample testing history since 2007---results of testing and what was done with those results.
2. Increase core sample testing.
3. Increase monitoring and compliance of road specifications, making sure roads are built to specifications.
4. Standardize the procedure for inspecting roads in a timely manner so that a bond may be cashed if necessary.
5. Before the city accepts a road, the results of core sample testing should be given to the city council and the council should vote on accepting the road. When the city accepts a road we are taking responsibility for its upkeep. If the road was poorly constructed, the upkeep and maintenance costs could be costly and can happen quickly.
6. Core sample results should be made available in digital format on the city's website for further transparency.
7. If the city does not accept a road, the responsibility for the maintenance and upkeep of the road would be the developer's responsibility.