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Compaction-SUPERPAVE Case Studies

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November 19, 2003

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Personal Background

- Work for a paving contractor in Florida.
- 19 years experience in the materials business.
 - 16 years with Consultants.
 - 2 years with FDOT.
 - 1 year with a contractor.
- Formal education is in business and management with technical certificates in asphalt, soils and aggregates.

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Attendance Roster

- 8% of you I could not define what industry you represent.
- 8% were from contractors.
- 9% were from consultants.
- 30% were from gov't or academia.
- 45% were vendors/suppliers.
- 100% were here to get away from there. Wherever there is.

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Discussion Topics

- Will discuss the planning stages around compaction of SUPERPAVE.
- Will discuss the approach we have used for educating and training.
- Look at good things and not so good things that we encountered in our re-structuring.

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Paving Approach

- Past Approach – Will it work in the in the SUPERPAVE world?
- *No!*
- Let's discuss how we need to approach SUPERPAVE.



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Where does the compaction process begin?

- Compaction begins in the early planning stages.
- What mix design(s) are we using and how do they function?
- What equipment will we need for the effort?



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Planning

- What mixes are we using?
- Do the mixes have a history?
 - What worked before and what went wrong?
- What equipment do we need?
 - Rollers; testing equipment (density gauges, core drills); etc.

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Planning (Cont.)


- How will we analyze and interpret the data?
- Who will be empowered to make decisions and adjustments?
- What is the internal chain of command?
 - External chain?

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Compaction begins at the plant.

- What types of material are we using?
- Do we have adequate stockpiles that are being properly worked?




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Incoming Materials

- Are we depositing aggregates into the correct piles?
- Are the stockpiles properly identified?




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The Plant Looks Nice?

- Are we ready to pave?
- Can we obtain density with the mix being used?
- Do we have adequate equipment and *trained* personnel?




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Laboratory

- Do we have a lab that is adequately equipped and staffed?
- Have the technicians obtained the necessary certifications?
- Are the technicians *qualified?*



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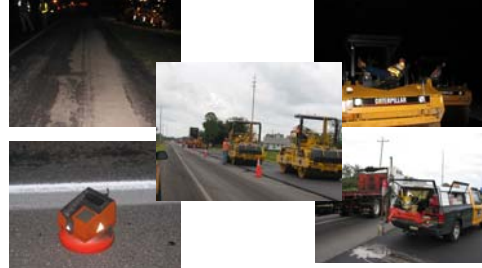
Let's take it to the field.

- Inspection of the base material is necessary.
 - Has it been constructed to the proper slope/elevation/grade?
 - Has it met minimum density per project specifications?
 - Has it been properly primed?
- Bottom-line question – Is it ready for the black stuff?

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What equipment do we need?



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Do we have paving personnel?

- Looks like we do.



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Perhaps we have more personnel than we need.



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Better question – Do we have trained personnel?

- Take the time and expense to train the paving personnel.
This includes everyone on the crew.



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Management must make a decision.

- Can we operate the way we have in the past? ***No!***
- Can we continue to employ crew members that are not adequately trained to do their assignments? ***No!***
- Do we want to be in the business of placing SUPERPAVE mix? ***Yes ! Why? This is the industry standard that we must adjust to.***

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To be successful in SUPERPAVE, expect to invest money and time.

- Look to your state/local asphalt association to put on training sessions for:
 - Your quality control; plant; paving; and management personnel.
 - This training should be from the bottom up and the top down.

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Training: Discuss differences between Marshall and SUPERPAVE mixes.

- Specifications
- Temperature
 - Marshall vs. Superpave
- Rollers
 - Size
 - Frequency
 - Amplitude

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Equipment

- What equipment will we use on-site?
- Is the equipment properly maintained and ready to go?
- Do we have backup equipment? (Both for the crew and the QC)

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Let's look at the equipment.

- Is this acceptable?
- The correct answer should be no. *This is not acceptable. Do not start the shift.*
- Bottom line, *plan early* and have properly maintained equipment on-site.



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Do we have the proper rollers?

- Are these rollers adequate?
- Yes and no.
 - It depends on how we utilize them.



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Practices observed.

- If I can still see the crew, I must be close enough to compact the mix.




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Practices (cont.)

- Rollers will not operate without an operator.




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Found the roller operator.

- WAKE HIM UP!**




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Practices (cont.)

- It is difficult to place mix when you do not have any. *Nice example of how "not" to run the hopper during production.*



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Practices (cont.)

- Here we go again. We call this pre-compaction.




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Do we have the tack correct?

- Does it meet the specifications?
- Is the spread rate correct?
- Has it broke?




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The paver is moving on down the road. *Speed those rollers up!*

- Rollers control the rate of paving.** Do not let other pieces of the puzzle control the rate.
- Educate the paving foreman to plan before paving begins.
 - How many passes of the rollers can he anticipate? This will establish the rate of paving.




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Paver & Rollers are a Team

- Oh where'o/where has the paver gone?
- Where have the rollers gone?



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SUPERPAVE Compaction

- SUPERPAVE mixes are perhaps the most difficult mixes to compact.
 - SUPERPAVE mixes are easily compacted with appropriate training, planning and equipment.

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Factors affecting SUPERPAVE density.

- Training
 - Compaction does not happen by accident. Compaction is a result of educating the crew.
 - Training should take place at in-house seminars and daily during paving.
 - Quality Control technicians are instrumental in daily training.

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Factors affecting SUPERPAVE density. (Cont.)

- Paving foremen need to nurture the process rather than fight it. Know when to “nip-it-in-the-butt” and when to take the time to explain and train.

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What makes it all work?

Quality Control!

- Management must buy into the quality control process and invest in it.
- The quality control staff must be empowered to make decisions and adjust rolling patterns.
- The field data gathered during a paving shift must be interpreted and analyzed for validity.

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Quality Control (Cont.)

- Results must be obtained quickly.
- Results must be validated.
- *Remember not to shoot the messenger. If you do not like what the Quality Control Staff has to say, change your process, not the personnel.*

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Summary

- Density on SUPERPAVE is not difficult to obtain. Obtaining it requires:
 - Management investing in the process through training and adequate equipment.
 - Company personnel taking ownership of the end product throughout all stages of the process. This begins in the estimating stage and ends when the mix hits the road and is accepted by the owner.

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Summary (Cont.)

- Quality control is the key. Train and empower a staff that can educate and make on the spot decisions.

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Summary (Cont.)

- *The most important thing to remember is to **do the right thing every day**. Remember that some days this means we limit our production to resolve issues. Do the right thing!*

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