7 Habits of Highly Effective Producers

Steve McReynolds

Asphalt Testing Solutions & Engineering

7 Habits of Highly Effective Producers

1. Know Your Stockpiles
2. Keep Your Plant Calibrated
3. Produce in Long Runs
4. Produce with Steady Runs
5. Control Mix Temp +/- 10°
6. Load in Multiple Drops
7. Make Calculated Mix Changes

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1. Know Your Stockpiles

- **Gradation will vary from the quarry**
  - Between transportation from the quarry to the plant, then delivery to the stockpiles, the material has many chances to adjust or get contaminated
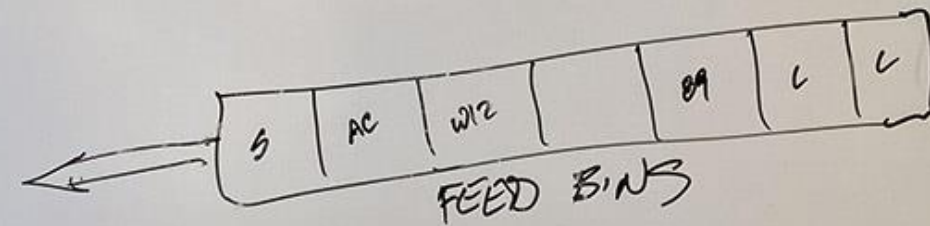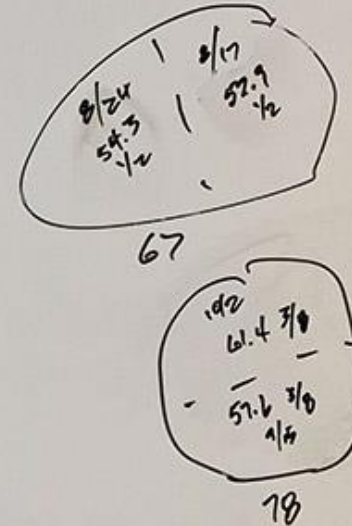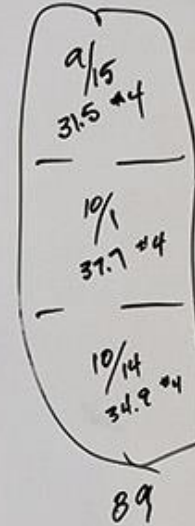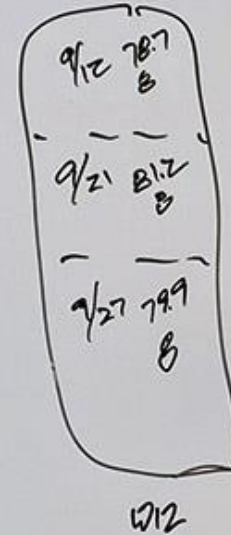
1. Know Your Stockpiles

- Gradation will vary from the quarry
  - Best practice is to check the gradations as material is delivered to your plant, every 1000 to 5000 tons. We recommend every 1000 tons.

1. Know Your Stockpiles

- "Map" your stockpiles
  - Draw a diagram of your stockpiles and date each pile as the material is delivered
  - Successful producers always know the gradation of each stockpile before they run them through the plant
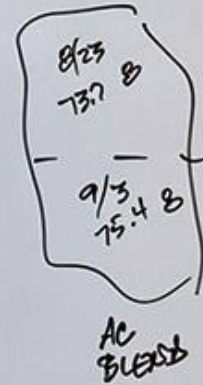
1. Know Your Stockpiles

- Use a First In – First Out (FIFO) method for materials
    - Running your "oldest" material through the plant is best practice. This gives the QC team time to test the newest material at the plant.

1. Know Your Stockpiles

- Separate material into "cells"
  - Front / back or left / right
  - Recharge one cell at a time

1. Know Your Stockpiles

- **Use blend sheets to adjust bin pulls**
  - Asphalt mix designers and producers are allowed to make small adjustments to the mix to account for variations in stockpile gradations – document these changes in a blend sheet.

	PLANT 2	A0216		BLEND CHANGE for PLANT PRODUCTION				S-1 - 50%	
	Start up	9/23/13							
	RAP	BIN #1	BIN #2	BIN #3	BIN #4	BIN #5	Design JMF	Virgin Matl	
MATERIAL:	RAP	78	89	W-12	M-10	Sand			
%'s	50%	16%	18%	10%	0%	6%	100%	100%	
Set-up	50%	16%	18%	10%	0%	6%	100%	NEW JMF	Difference
3/4"	100	100	100	100	100	100	100	100	0
1/2"	100	90.97	100	100	100	100	99	99	0
3/8"	97.57	55.34	95.73	100	100	100	91	91	0
#4	85.02	10.94	23.79	99.28	99.38	100	65	64	1
#8	70.11	2.86	3.8	73.99	78.97	100	49	50	-1
#16	56.83	1.96	2.11	47.73	56.84	100	39	40	-1
#30	47.82	1.72	1.77	32.5	42.36	97.58	33	34	-1
#50	38.99	1.55	1.6	21.11	32.83	86.03	26	27	-1
#100	22.20	1.32	1.4	11.86	24.16	18.91	13	14	-1
#200	10.6	1.1	1.1	5.5	15.7	1.3	5.6	6.32	-1
Gsb	2.638	2.729	2.705	2.713	2.735	2.626	Design	2.692	
Gsb	0.000	0.059	0.067	0.037	0.000	0.000	New	6.172	

DESIGN				CHANGE	
Optimum Asphalt	5.1%	Plant AC Setting 4.9%		Optimum Asphalt	5.1%
Milled Material	1.2%	PG52-28		Milled Material	1.2%
Virgin Asphalt	3.9%			Virgin Asphalt	3.9%
Mixing Temperture	300				
.50% Antistrip					

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2. Keep Your Plant Calibrated

- Calibrations do shift / will shift

- Routinely check plant calibrations
  - Successful producers check calibrations every 2 – 4 weeks
  - Remember "checking" is not "changing"

2. Keep Your Plant Calibrated

- Don't wait until mix is bad
  - Be proactive
  - Machines wear out, problems develop

- Alert your QC department when making ANY changes

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3. Produce in Long Runs

- **Don't bounce between mixes rapidly**
  - Drum plants are not designed to make short runs, switching between different materials
  - It takes time to "level out" between mixes
  - Stagger start times when producing multiple mixes

3. Produce in Long Runs

- Try to produce one silo at a time
  - Fill one silo, then ship out that mix while you switch to the next mix
  - Another option is to run 100 ton runs as your minimum

- PID Loops in automation affect switching between mixes

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4. Produce with Steady Runs

- Don't rapidly change your TPH
  - It takes time for controls to adjust
  - Make incremental changes

4. Produce with Steady Runs

- Account for time for bag house fines to stabilize
  - It can take 20 – 40 minutes for fines to be collected, cleaned off the bags, travel through the fines return equipment and return to the mix – the fines are vital for managing air voids

- Steady running produces steady mixes

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5. Control Mix Temp +/- 10º

- Temperature control is directly related to achieving consistent field density
    - Mix temp influences the rolling patter
- Plant operator and loader operator must have constant communication

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6. Load in Multiple Drops

- Socket load the trucks
  - Front – back – middle
  - This minimizes the chance for segregation in the truck
  - If your tucks are live-bottom or bottom dump trucks, find best loading procedure by checking every other load for gradation consistency

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7. Only Make Calculated Changes

- Wait and look for a trend
  - Work with your QC team
  - Do not make rapid changes based on one test result
- Mixes that bounce back and forth are indicators of segregation

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7 Habits of Highly Effective Pavers

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1. Lead Tailgate Meeting
2. Be Mindful of Tack Application
3. Manage Haul Trucks
4. Monitor the Hopper and Screed
5. Produce a Quality Mat
6. Master the Roller
7. Prioritize Quality Control

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1. Lead Tailgate Meeting

- Have a quality-minded discussion with points to cover prepared:
  - Mix Type
  - Lanes
  - Lifts
  - Thickness
  - Slope
  - Density Target
  - Compaction Equipment
  - Rolling Pattern

TAILGATE DISCUSSION

DATE:	
TIME:	
PROJECT:	
MEETING CALLED BY :	

SIZE, TYPE, AND QUANTITY OF COMPACTION EQUIPMENT BEING USED? Please notate any issues with the equipment.

ROLLING PATTERN : 3 Osc, 2 Staic, 2 Finish
Roller Operator - 12 TON
Roller Operator - 12 TON
Roller Operator - 7 TON

WHO ATTENDED?

WHAT WAS DISCUSSED? (The following items at a minimum.)

Texture/Segregation:
Straight Lane Lines:
Don't Bump Joints:
Don't Back Scatter Unnecessarily:
Lift Requirements: 1/3, 2/3
Number of Pulls: Several: 3
Lane(s) To Be Paved: R3, R2, R1
Electronic Slope/Joint Matcher On: Yes
If no electronics are used, will adjustments for thickness be made using the tow point or the screws?
Screed Vibration/Control On: Yes
Screed Checked w/Straightedge:
Cross Slope/Depth Requirement: R3 - 3%, R2 - 2%, R1 - 2%
Density Requirement: 92%
Workmanship, Especially at Intersections & Joints:

Intended Use of Mix Placement (Base, Structural, Friction, Misc., Temp., Curb Pad, etc.)	Mix Type & Traffic Level	Mix Design #
STRUCTURE	SP 12.5 TL-D	SP 19-17435B

Additional Comments:

Please email completed form to the designated personnel at the end of your shift.

Name   email@email.com
Name   email@email.com

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2. Be Mindful of Tack Application

- Ensure the surface to be tacked is dry and has been swept clean
  - power blowers work really well
- Make sure tack bar tips are spraying properly for full coverage
  - no corn rows or wide gaps

2. Be Mindful of Tack Application

- The proper application rate must be used (QC)

- If an emulsion is being used, make sure the tack has broken before paving begins

2. Be Mindful of Tack Application

- Make sure not to over tack in hand wand areas

- Proper tack application can help with density

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3. Manage Haul Trucks

- Balance trucks with production
  - Software available, e.g., CAT Paving Production Calculator App

3. Manage Haul Trucks

- Don't bump paver (or MTV)
- Charge hopper swiftly

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4. Monitor the Hopper & Screed

- Maintain hopper at 1/3 – 2/3 full at all times

- Fold wings periodically to keep mix "live"

4. Monitor the Hopper & Screed

- Check depth frequently
- If changing depth, use screws or tow points for both sides
  - Don't use screws on one side and tow points on the other – keep consistent

4. Monitor the Hopper & Screed

- Monitor for marks or drags
- Maintain constant head of material in auger

5. Produce a Quality Mat

- Avoid excess luting or raking
- Don't back scatter material
  - lute object out and fill void with shoveled hot mix
- Remove large aggregates from the mat after luting
  - Get rid of it! Don't roll it in!

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7. Prioritize Quality Control

6. Master the Roller

- Ensure your pattern is keeping pace with the paver
  - If not, insist the paver speed be slowed down

6. Master the Roller

- Monitor mat constantly for "pick-up"

- Use proper technique to avoid "roller heads"

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7. Prioritize Quality Control

- Monitor edge lines for straightness
- Monitor temperatures of incoming trucks and the mat

7. Prioritize Quality Control

- Monitor spread rate frequently

- Monitor mat for defects such as pulls, tears, segregation

7. Prioritize Quality Control

- Obtain process control (PC) cores to ensure rolling pattern is achieving density

- Adjust rolling pattern if needed based on PC cores or density gauge

7. Prioritize Quality Control

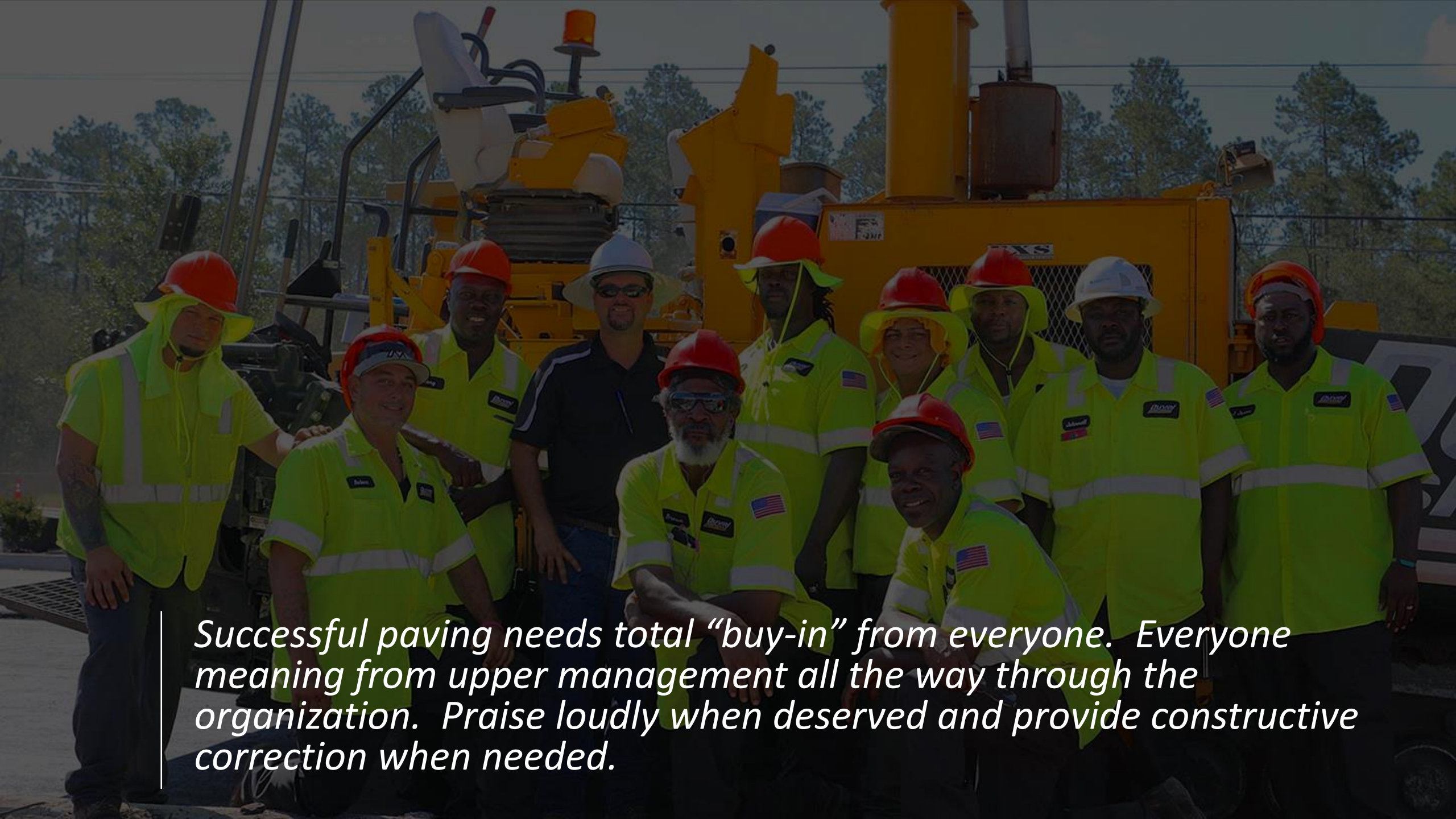- Check all joints and the mat for smoothness with manual or rolling straightedge

7. Prioritize Quality Control

- Temperature Guns
- Density Gauges
  - Nuclear
  - Non-Nuclear

7 Habits of Highly Effective Pavers

1. Lead Tailgate Meeting
2. Manage Haul Trucks
3. Monitor the Hopper
4. Pay attention to the Screed
5. Produce a Quality Mat
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Successful paving needs total "buy-in" from everyone. Everyone meaning from upper management all the way through the organization. Praise loudly when deserved and provide constructive correction when needed.

Thank You!
Questions? Comments?

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