

A photograph showing a construction worker in yellow gloves pouring a grey, viscous substance from a white bucket labeled 'Utilibond' into a circular hole in the pavement. Another worker in white shoes and yellow gloves is using a tool to work on the hole. The background is a concrete surface.

# **Utilibond**<sup>TM</sup>

**Permanent Pavement Bonding Compound**

## **The Ins and Outs of Core Restoration & Utilibond**

2017 FALL KEYHOLE MEETING  
PG&E WINTERS CA

# Utilibond Features:

- Specially designed for Keyhole Core Reinstatement.
- Superior Bond strength over 50,000 lb in 30 minutes.
- 30 minute set Time.
- Creates waterproof joint.
- Field Proven for over 20 years
- Excellent Freeze/Thaw Resistance
- 2 year shelf life
- DOT approved
- 2 Colors, Aged asphalt and natural concrete.





# Core Reinstatement with Utilibond.



# Step 1. Backfill



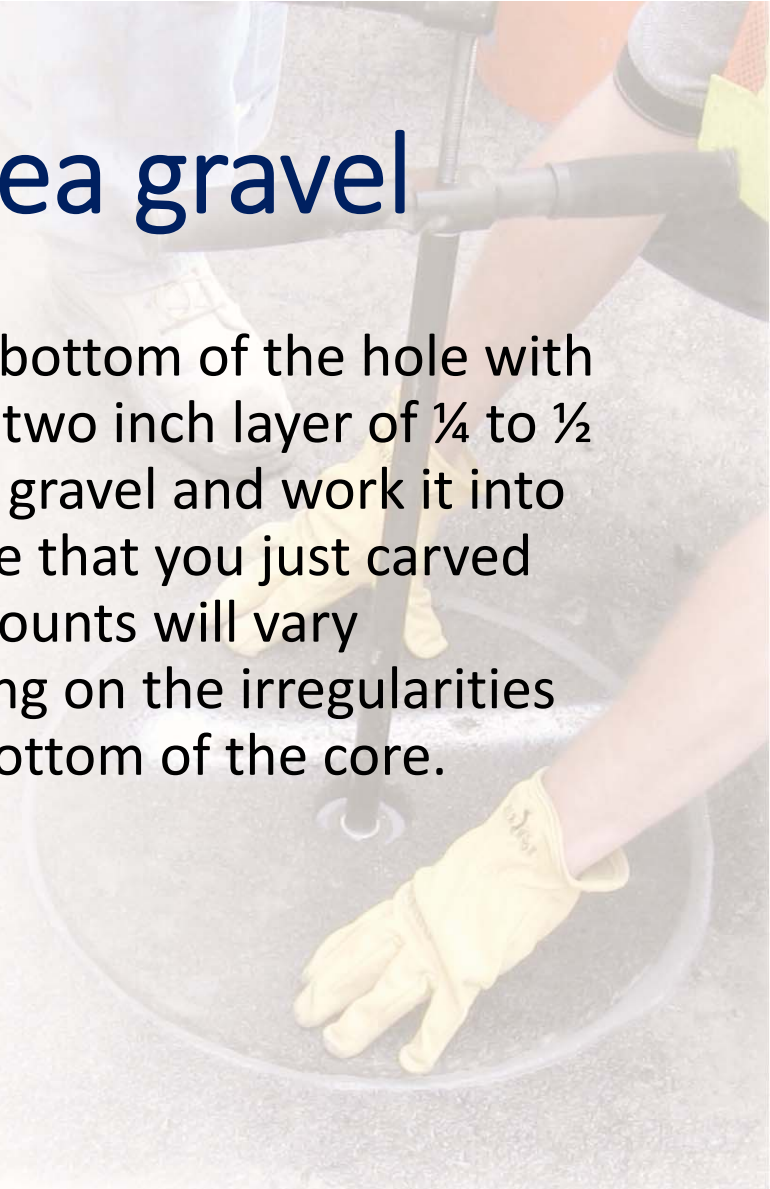
- Ensure that the top of the backfill is 1 to 2 inches below the level of the base of the pavement layer.
- Using a pointed trowel undercut the bottom of the existing pavement all around the circumference of the hole to a depth of an inch or so. This will allow the pea gravel (the next step) to extend into that space under the pavement.



## Step 2. Add $\frac{1}{4}$ to $\frac{1}{2}$ inch pea gravel



- Line the bottom of the hole with a one to two inch layer of  $\frac{1}{4}$  to  $\frac{1}{2}$  inch pea gravel and work it into the space that you just carved out. Amounts will vary depending on the irregularities on the bottom of the core.



## Step 3. The Dry Fit



- Using the core puller, lower the core back into the hole following the orientation marks to check the level of the surface of the core with the existing pavement.
- Adjust the pea gravel until the surface of the core is level all around with the surrounding pavement and approximately  $\frac{1}{2}$  inch below the surface. This process is referred to as "dry fitting" the core. This is an essential step for a proper core reinstatement.
- Once the Utilibond has been added to the hole and the core has been reinserted it will be too late to adjust its position. Make sure it's done right the first time.



## Step 4. The Cleaning

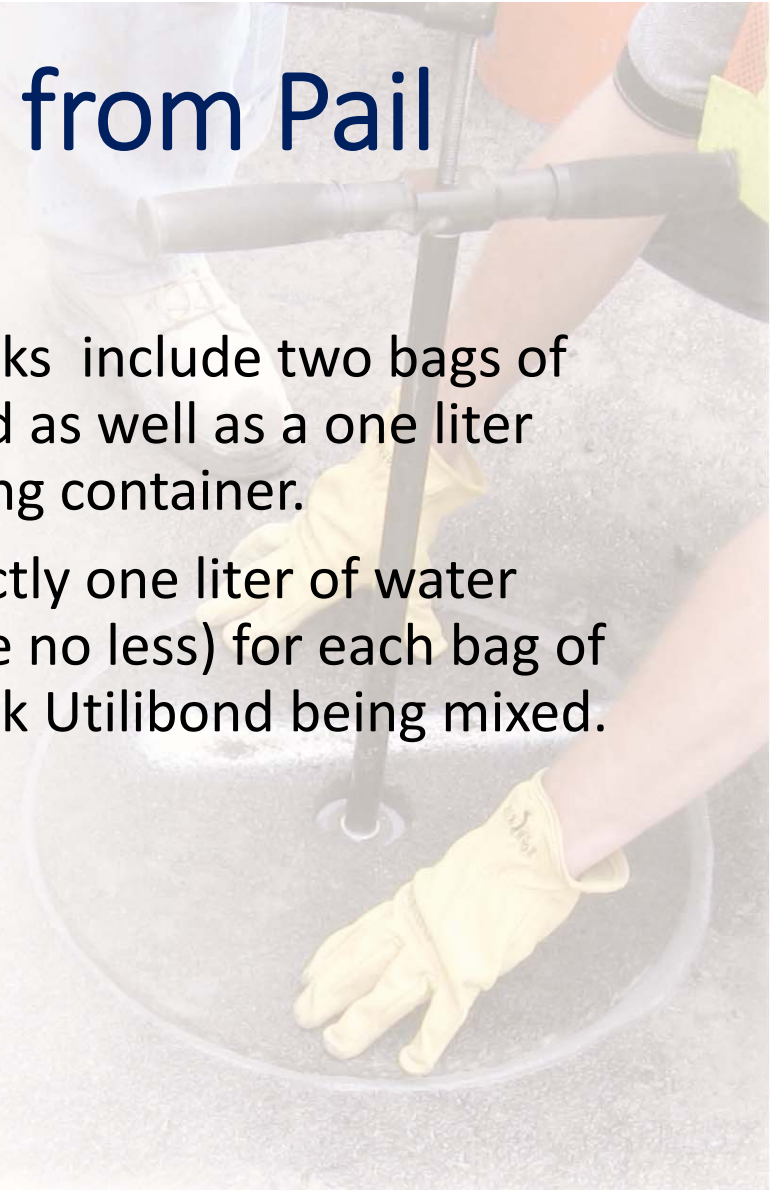


- Utilibond will not bond to dirty surfaces, clean the outside vertical surface of the core and the walls of the cored hole with a clean, damp sponge to remove all loose cutting debris or backfill particulate.
- Proper bonding depends on achieving a clean surface for the bonding agent to adhere to. Now you are ready to mix the Utilibond.

## Step 5. Remove Contents from Pail and Add Water



- Twin Packs include two bags of Utilibond as well as a one liter measuring container.
- Add exactly one liter of water (no more no less) for each bag of Twin Pack Utilibond being mixed.





## Step. 6 Add Utilibond to the water and Mix



- Carefully open the bag(s) of Utilibond, creating a clean opening through which to pour the Utilibond powder into the pail.
- Engage the drill and insert the mixing blade to the bottom of the pail while slowly pouring the Utilibond powder into the water in the pail.
- At the start the mix may appear to be lumpy and dry BUT do not add more water. Keep mixing and the Utilibond compound will “turn” after about one minute and begin to smooth out.

## Step 7. Continue Mixing (2-3 Minutes)



- Move the mixing blade continuously up and down to the bottom and around, scraping the sides of the pail, to make sure that everything is blended together. Continue until the mixture is smooth and flowing.
- After about 2- 3 minutes of mixing the Utilibond will appear smooth and creamy with a flow characteristic similar to that of pancake batter.
- The Utilibond is now ready to use.



## Step 8. The Pour



- Carefully pour the blended Utilibond into the hole so as not to disturb the layer of pea gravel at the bottom of the hole.
- For shallow cores it may not be necessary to pour the entire pail into the hole but it is always better to have more Utilibond in the hole, to ensure that the reinstated core is completely surrounded by Utilibond.

## Step 9. The Reinstatement



- Using the core-puller align the core with the orientation marks on the surface and slowly lower it down into the hole on top of the Utilibond.
- Gently work the core downward using a swiveling back and forth motion to allow the bonding compound to flow up through the cut spaces all around the core (the kerf). Remove the excess Utilibond with a trowel as it flows up and onto the surface.



## Step 9. The Reinstatement...continued



- When the entire kerf is filled and the core completely surrounded by Utilibond, remove the core puller to allow the rest of the Utilibond to flow up through the center pilot hole.
- Apply gentle pressure (or tapping) to the top of the core to bring it level and flush with the rest of the pavement.
- Holding the trowel perpendicular to the core slide the flat bottom edge across the surface of the core to the outer edges to check that the core is flush and level with the rest of the roadway all around the circumference.
- Use gentle taps from a pry-bar on the high points to bring it level. Use the flat trowels to continuously clean up the excess Utilibond.

# Step 10. Clean and Finish



- Because the effectiveness of a reinstatement is judged by the appearance of the surface, thoroughly clean off any excess Utilibond from the surrounding pavement before it dries carefully using a wet grouting sponge to “scrub-off” excess Utilibond from the top of the core and surrounding area.
- The Utilibond will begin to set up within 15 minutes or so at 70° F.
- Keep the exposed Utilibond surfaces in the kerf and pilot hole “damp” by periodically shaking drops of water from a whitewash brush on the Utilibond until the surface is firm to the touch. Thoroughly clean all mixing tools before the Utilibond has a chance to set.



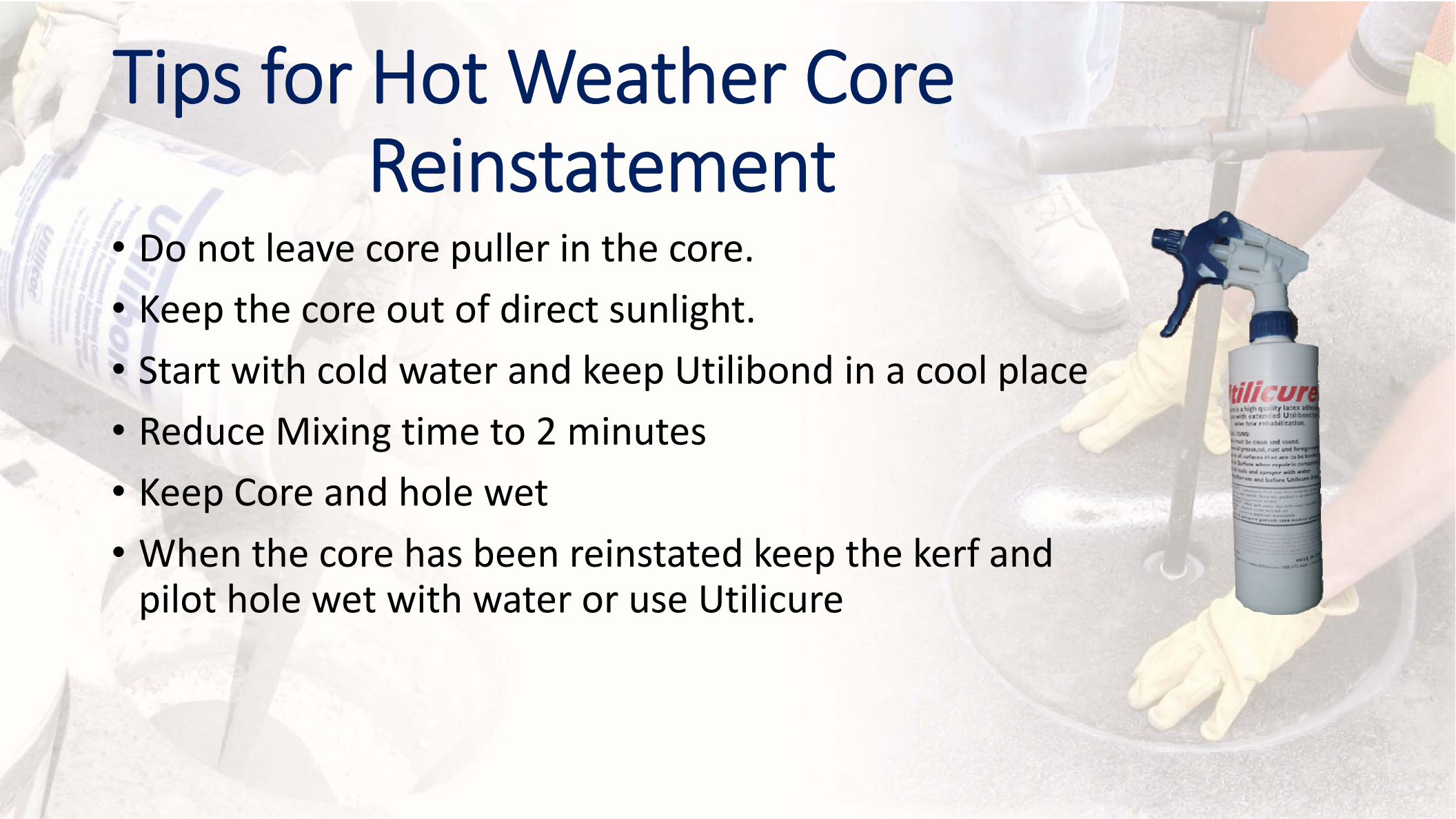
# Step 11. Finished Product



- Once the core has gained strength (about 30 minutes at 70° F), you can use high pressure water to wash-off any excess debris, carefully avoiding the Utilibond in the kerf and pilot hole, and thoroughly sweep the area before leaving.
- Properly dispose of all excess Utilibond material and reuse or recycle the Utilibond pail.

# Tips for Hot Weather Core Reinstatement

- Do not leave core puller in the core.
- Keep the core out of direct sunlight.
- Start with cold water and keep Utilibond in a cool place
- Reduce Mixing time to 2 minutes
- Keep Core and hole wet
- When the core has been reinstated keep the kerf and pilot hole wet with water or use Utilicure





# Tips for Cold Weather Core Reinstatement

- Increase mixing time to 4 to 5 minutes
- At temperatures below 60°F set time will increase to 45 minutes
- At temperatures below 50°F set time will increase to 60+ minutes
- Utilibond XL can be added to the Utilibond mixture to decrease the set time by 15 to 30 minutes



# Tips for Cold Weather Core Reinstatement

- At temperatures below 40°F use of a core heater is recommended.
- The Core Heater will drive frost out of the hole and core.
- Raising temperature of the core and hole to 70°F.
- Resulting in a shorter set time.





# Valve Box / Test Station Installation



Core Hole



Remove Core



Install Lead and  
Clean coresd hole



Set Valve Box



Level Valve Box



Ready to Fill



Supplies



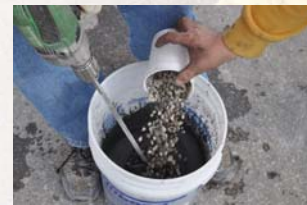
Add Water



Add Utilibond



Mix Utilibond



Add Pea gravel



Mix in Pea gravel



Spray valve Box &  
Hole with Utilicure



Pour in Mixture



Remove excess



Keep Wet



Spray with Utilicure



Completed job

# Delaminated Cores

- Once a core has been cut, and depending on the road which it was cut from, it is not uncommon to find the core has delaminated.
- This occurs most often when the top portion of the core is asphalt and the bottom section is concrete. However, Multi level asphalt road will delaminate as well.
- By inserting the core puller all the way to the bottom of the core it is possible to remove both delaminated sections.
- Use Utilibond to bond the delaminated sections together when reinstating the core





# Reinstating a Delaminated core

- Dry fit the core 1/2" lower than normal.
- Make sure the orientation of the top portion matches the bottom portion.
- Mark with paint if required.
- Reinstall the bottom portion first, allowing the Utilibond to flow up and onto the top of the lower core - pour more Utilibond on top of bottom core.
- Slowly lower the top portion onto the bottom portion and push down to level with surrounding roadway.
- Clean up remaining Utilibond off top of roadway and core and trowel smooth.
- Keep kerf and center pilot bit area wet with wash brush and clean water until initial set has occurred.

# Utilibond Colors to Match Roadway

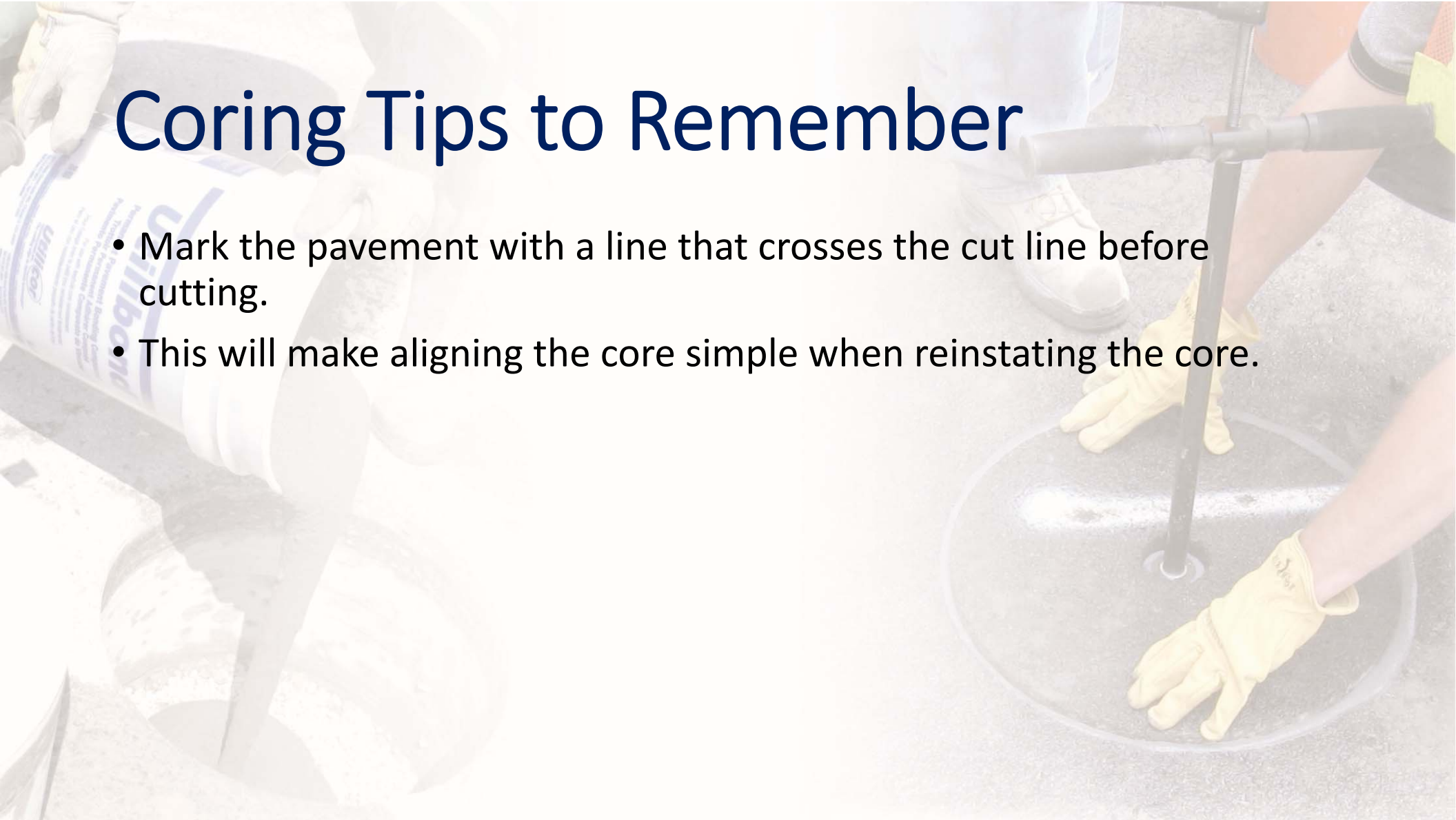
- For new roads that require the Utilibond to be jet Black.
- Add Utiliblack to the Measuring Cup.
- Add remaining 940 ml of water.
- Pour in Pail.
- Add Utilibond and mix as per instructions.
- Pour Utilibond in hole and reinstate the core.





# Coring Tips to Remember

- Mark the pavement with a line that crosses the cut line before cutting.
- This will make aligning the core simple when reinstating the core.



# Core Drums

- Coring drum segments are composed of synthetic diamonds impregnated in a specially formulated matrix.
- As the segments cut the matrix is worn away exposing new diamonds.
- It is important that when cutting the cooling water creates a slurry that allows the debris to flow away for the cut line.
- Core drums generally cut 400 to 600 inches of substrate, before replacement.





# Centre Pilot Bit

- PDC Centre Pilot Bit.
- Polycrystalline Diamond Compact Buttons make up the bit.
- Smoothly cuts the pilot hole simultaneously.
- Long life, faster cut = Less Cost



# Utiliplug

- When a core is not available to reinstate with.
- Back fill hole to 4" from the surface
- Mix two Bags of Utilibond
- Add Pea Gravel to the mixture until pail is full
- Clean the inside of the hole
- Pour in Mixture.
- Trowel smooth and keep surface wet until set.





# Multiple Cores

- Locates are off?
- Need more room?
- Overlap the Cores.
- Easily reinstated.



A person wearing white gloves is pouring a white, granular substance from a white bucket labeled 'Utilibond' into a hole in the ground. Another person wearing yellow gloves is using a long-handled tool to mix the substance in the hole. The background is a light-colored concrete surface.

# Questions?

Andrew Pollock  
Vice President and General manager  
Utilicor Technologies  
416-706-7811 Mobile  
[apolock@utilicor.ca](mailto:apolock@utilicor.ca)