

OGFC Best Practices



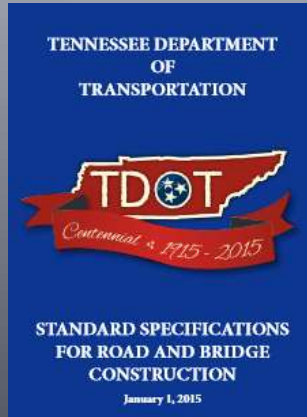
OGFC Best Practices Guide

TDOT Materials and Tests Division

Overview

- Project Preparation and Specs
- Mix Production/Delivery
- Paving and Rolling
- Extra Consideration

Project Preparation and Specifications

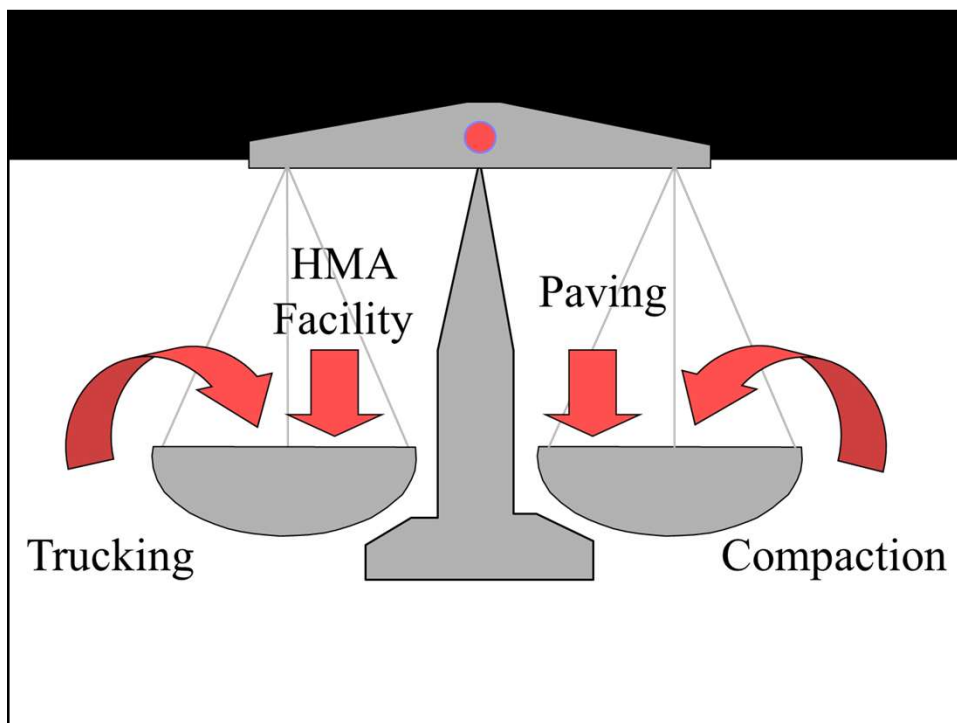


Seasonal/Temp Limitations

- Paving Season
 - April 1 to November 1
- Surface **AND** Air Temperature minimum 55°F and rising
 - Mix cools quickly after placement due to openness, surface area, and thickness.
 - Paving below 55°F has proven to lead to raveling of the mix.

Balancing Production

- OGFC cools down quickly so that mix production and delivery must be balanced with lay down and compaction to ensure a smooth operation and a high quality mat.
- Haul trucks: Adequate numbers
- Before you begin paving, calculate an ideal paver speed and continuously check and maintain it.
- Remember, balance of all the production rates is the key to quality OGFC pavement.



Mix Production



Plant Production

- OGFC is much more sensitive to deviation from the mix design AC content.
- Must be checked carefully by the contractor's QC Tech as well as during Acceptance Testing.
- Liquidated Damages for AC deviation are twice that of regular mix as a result of this.

Stabilizing Fiber

- Ensure stabilizing fibers are added at the plant per the JMF.
- The Stabilizing fiber is a very important part of the mix.
 - Slag Wool (min. 0.4% of total mix)
 - Cellulose (min. 0.3% of total mix)
- The fiber keeps the asphalt binder from draining out of the mix at high temperatures

Mixture Storage

- OGFC should not be stored at elevated temperature for an extended period of time due to drain down.
- OGFC should not be stored for more than 2 hrs.
- Truck bed should be cleaned and fully coated with release agent due to bonding tendency of modified asphalt binder.

Mixture Delivery

- Delivery times for OGFC should be as short as possible. And preferably less than 1 hour to prevent drain down and maintain temperature.
- To keep mix temperature high, allow tarp to drape close to mix to minimize air between the mix and the tarp.
- **Mix must be a min of 280F on arrival.**

Paving and Compaction



Tack Application

- It is very important to ensure a proper tack application but we don't want so much tack that it bleeds into the voids.
- Typical application is **0.07 gal/SY**. This may need to be field adjusted depending on the situation.
- Trackless tack works best with OGFC. It helps prevent build up on the tires which shows up in the mat.

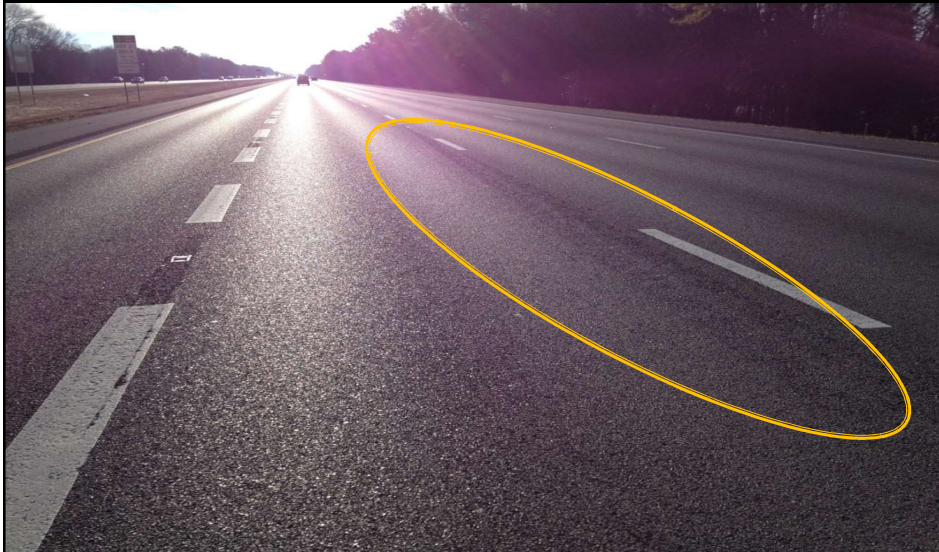
Placement

- OGFC tends to be stickier than other mixes. Care should be taken to ensure that the mat isn't torn by the paver.
- **The screed heater should be turned on to help prevent pulling of the mix.**

Handworking

- OGFC is difficult to effectively handwork. Minimize/refrain from luting if possible.
- Luting/raking will result in a poor finished surface and eventual raveling.
- If rough spots are appearing on mat check to make sure screed heater is working properly rather than handworking.

Handworking



Compaction (407.15)

- Minimum of 2 rollers, each 10 ton static
- No test strip required
- No pneumatic rollers & No vibratory mode
- Breakdown roller to begin rolling approximately 50' from paver, or as soon as practical without picking up material.
- Apply an approved release agent to water in steel drum roller is recommended.

Compaction (407.15)

- Minimum rolling is two passes with a steel double drum roller before the temperature of the mix falls below 185°F.
- Do not over roll the mat, no more than 4 passes is recommended.
- The goal is to achieve interlock of the aggregates while leaving open voids
- If rollers must idle, remove from the hot mat if at all possible.

Extra Consideration



Ponding and Drainage

- CS or other impermeable mix is placed below OGFC so that the water is allowed to drain.
 - Important to get proper cross slope (2% min.) for drainage
- Extra attention needs to be taken when placing the CS mix in the gore areas at ramps to ensure that the water does not pond in a travel lane.
- Careful attention to OGFC and 411D tie-in
- Tie-ins need to be avoided in areas where water will have drainage issues (OGFC placed upslope of 411D)

Shoulder Drainage

- Very important to ensure OGFC layer is daylighted so that water may drain from the roadway.
- Ponded water may become a safety hazard and will ultimately damage the pavement
- Recommended to either:
 - Clip shoulders prior to paving
 - Only partially pave the shoulder with OGFC

Shoulder Drainage



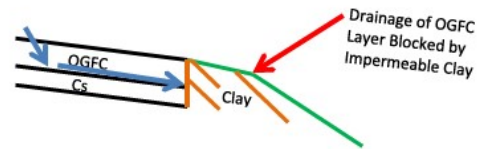
Clipping the shoulder with a motor grader



Shoulder only partially overlaid with OGFC

Shoulder Drainage

- On full width paved shoulders: **If shoulders aren't clipped, water will stay in the layer leading premature failures.**



Poor Drainage Problems

Poor drainage may cause:



Saturated subbase that pumps, causing expensive base failures



Saturated base/binder layers that strip

Paving at Ramps

- When paving around ramps, the top of the CS mix needs to be placed evenly with the ramp at joint of other tie in so that the water can drain out of the OGFC.
- OGFC has been used to fully overlay concrete pavement, placing OGFC across the full width of the ramp is an option.

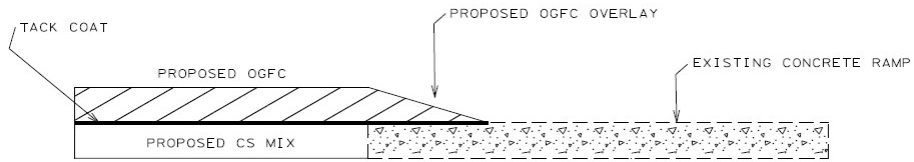
Ponding at Ramp



OGFC Best Practices

Solution: Ponding at Ramps

NOTE: THICKNESS OF CS MIXTURE SHOULD TRANSITION TO MEET FLUSH WITH ALL ADJACENT CONCRETE RAMP AND GORE AREAS.



OGFC OVERLAY DETAIL FOR CONCRETE RAMP

(COST TO BE INCLUDED IN THE PRICE BID FOR THE PROPOSED SURFACE MIX)



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Bridge Tie-ins

- Similar to ramps attention needs to be paid at the bridge ends so as to not trap water.
- Additional milling may be required immediately preceding the CS layer, or a pavement wedge could be used and removed prior to paving.

Bridge Tie-ins

- Expansion joints may require additional work, will be dependent on a case by case basis.
- Bridge ends are hard to tie into which sometimes requires hand work.
 - Since OGFC is hard to lute, there are still some issues with getting a smooth transition.
- Some Regions prefer to place D mix at bridge approaches on otherwise OGFC jobs to avoid these issues.

Paving at Drains

- When paving around drains, the bottom of the OGFC layer needs to be left higher than the drains, so that water does not pond.



Paving at Drains

- Alternatively, OGFC maybe day-lighted on the shoulder which allows water to reach the inlet.



Opening to Traffic

- After Compaction, wait until the pavement temperature gets down to about 110°F-120°F prior to opening to traffic to keep from picking up any of the surface material. When paving during time restrictions, this needs to be accounted for.