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Municipal Paving Inspector Checklist

Good Roads

Prepared by:



Municipal Paving Inspector Checklist

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Glossary

AC	Asphalt Cement
CIR	Cold In-Place Recycling
FDR	Full Depth Reclamation
HIR	Hot In-Place Recycling
HMA	Hot Mix Asphalt
JMF	Job Mix Formula
OTM	Ontario Traffic Manual
SMA	Stone Mastic Asphalt

1.0 Prior to Paving

a. Materials & Equipment

i. Materials

- o Mix arriving at the paving site is within the specified temperature range
- o Mix designs are reviewed and approved
- o Trial batch testing completed

ii. Asphalt Mix Plant

- o Aggregate samples are collected from stockpiles or after cold feed to compare gradation of each to design.
- o Check plant mix for uncoated aggregate, too much A/C, and visual imperfections.
- o Collect random samples of plant mix for testing to check for conformance with the specifications and JMF.
- o Collect samples of AC to test and confirm it is within the JMF tolerance.

iii. Trucks

- o Sufficient trucks are available to supply HMA for the paver to keep moving at a uniform speed.
- o Enough trucks are used to ensure supplying of mix is steady as to limit temperature segregation of the paved mat due to delays in supply of materials.
- o Trucks are clean and free of solvents before the mix is loaded.
- o Only approved release agents can be used, no diesel.
- o Trucks are equipped with tarpaulins to cover mix.
- o Trucks are loaded in a manner that limits material segregation.
- o Ensure no trucks clean out on the surface to be paved. (Clean out site to be determined by contractor. Clean out site should be cleaned out daily)
- o Monitor all units for oil leaks.

iv. Paving Machine

- o Paving screed is clean of debris and preheated before starting placement.
- o Screed leading edge is properly set.
- o Mix is being placed at the proper grade and cross-slope and at the specified thickness.
- o Automatic screed control is used whenever possible. (If manual controls are used, avoid frequent changes.)
- o Paver tires have proper air pressure and paver crawlers are in good condition with no loose crawlers.

- o Paver speed does not exceed maximum recommended speed as per contract specifications.

v. Rollers

- o A roller pattern has been established that achieves the proper in-place air voids according to OPSS.MUNI.310
- o The established rolling pattern is being followed.
- o Vibratory rollers are operated at high frequency and low amplitude for thin lifts and static mode in lifts less than 25mm.
- o Rubber-tired rollers tires must be warmed to prevent mixture pickup. Must be used on scratch courses.
- o Vibratory, static, or rubber-tired rollers are used for breakdown and intermediate rolling.
- o Static rollers or vibratory rollers in the static mode are used for finish rolling.
- o Rollers should never be parked on the mat as it would cause localized depressions.

b. Site Specifics (Prior to Paving)

i. Weather Requirements

- o Air temperature at the surface comply to operational constraints as per OPSS.MUNI.310.
- o Binder Course (2°C and rising)
- o Surface Course (7°C and rising)
- o SMA and Superpave 12.5FC2 (12°C and rising)
- o Paving should not begin if rain is imminent.

ii. Traffic Control

- o Traffic control plan conforms to plan specifications and complies with Ontario Traffic Manual (OTM) – Book 7.
- o Traffic control personnel are trained and qualified in accordance with contract documents.
- o Signs are removed or covered when they are no longer needed.
- o Pedestrian traffic does not require access across the tacked area during the application and curing of tack coat.
- o Mid-day change over plan to not interfere with proper curing.

iii. Surface Preparation (Cleaning)

- o Sweeping to clean the pavement prior to asphalt placement taken place.
- o All loose debris has been removed from the pavement leaving a clean and dry surface. Ensure all joints are cleaned, no dust remaining.

- o Grade and compaction of surface to be paved has been checked and properly prepared.
- o There are no soft spots or deformities.
- o Ensure float stone is removed from granular surface.
- o If paving multiple lifts, ensure paving surface is below 50 oC prior to paving the next lift.

iv. Surface Preparation (Tack Coat)

- o Check that all tack coat materials delivered meet the approved specifications or meets OPSS.MUNI.1103.
- o Material samples are collected for QA and referee.
- o Contractor has proper tack coat distributor.
- o Ensure sprayers are not plugged in the tack coat distributor.
- o Check that existing pavement is dry and clean before applying tack coat.
- o Tack coat is being applied uniformly at proper rate as specified in the Contract.
- o Visually check that tack coat has cured/broke to the desired level before placing hot mix pavement. Tack coat will turn black and sticky. Do not pave when brown and wet.
- o No traffic was allowed on the tack coated area before paving.
- o Contractor did not overspray beyond the pavement area
- o All vertical surfaces are tack coated.

2.0 HMA Paving

Prior to paving additional lifts, visually inspect the current mix placed to ensure it is free of:

- o Dragging (check if such defect exists)
- o Segregation
- o Visual defects

- o Paving is carried out full width to the same station each day.
- o Transition ramping and edge ramping is prepared prior to shut down at end of day (if paving job extends for more than one day)
- o Proper sequence of paving operation is taking place (e.g. intersections, tapers, ramps, bridge decks and all staging plans)
- o Temperature of mix delivered is as specified.
- o All required samples are taken, and reinstatement is completed once taken.
- o Quantity yields or thicknesses are checked throughout the placement.

Note: Inspectors should not direct thickness changes to paver operators, especially on projects with smoothness specifications.

- o Surface texture is uniform, free of segregation, tearing, or scuffing
- o Check density of the finished mat to ensure air voids within specifications
- o During paving, check that appropriate level of material is in the auger chamber (1/3 of the auger is covered with HMA). Ensure power hopper, “wings” is not fully cleared during operation as it will cause segregation

3.0 Resurfacing

a. Reclaiming Asphalt Pavement (Milling)

- o Reclaiming is carried out full width to the same station before shutdown each day and properly ramped.

i. Partial Pavement Removal

- o Check correct cross-fall, depth, and surface texture during milling.
- o Record reclaimed asphalt removal (m² and thickness)
- o Milled surface is broomed and inspected for imperfections.
- o Check that all iron works are adjusted to new elevations. Ramp or paint structures temporarily. Remove/mill ramps prior to paving.

ii. Full Depth Removal

- o Granular is restored to specified requirements following pavement removal.
- o Record area and depth of removals
- o Full milling procedures around all iron works and check that filter cloth, or alternative, is installed on all drainage structures.

b. Cut and Fill of Grooves

- o Check all the material delivered to verify that it is being supplied from the approved list.
- o Ensure proper sampling is taking place and batch numbers are recorded as specified in the Contract.
- o Existing pavement joints are marked to ensure that the new groove is located precisely over the existing joints.
- o Grooves are cleaned and dried, immediately (a maximum of two minutes) prior to pouring the joint sealing compound.
- o Grooves are cut and filled as soon as possible after paving, as specified in the Contract.

c. Routing and Sealing of Cracks

- o Check all the delivered material being supplied is approved as per OPSS.MUNI.1212.
- o Ensure proper sampling is taking place and batch numbers are recorded as specified in the Contract.

- o Router, kettle, and lance equipment as per Contract requirements
- o Cracks up to 20 mm wide are routed to the specified width and depth and that the rout is centered on the crack as per OPSS.MUNI.341 and OPSD.508.010
- o All routed and unrouted cracks are blown clean and dry using compressed air lance before sealing commences.
- o Debris, including excess sealing material, is removed from routed area and adjacent pavement.
- o Sealing material is applied immediately after cleaning and drying.
- o Record temperature of product prior to application
- o Sealing material is heated within the manufacturer's recommended range and is being continuously agitated.
- o Cracks are filled to proper depth as specified in the Contract.
- o Completed cracks are dusted or sprayed with a suitable bond breaker before opening to traffic.

4.0 Recycling

a. Hot-In-Place Recycling (HIR)

- o Mix design and material submissions meet the requirements as specified in the Contract.
- o Material supplied by the Contractor is sampled as specified in the Contract.
- o Pavement surface has been prepared as specified in the Contract.
- o HIR scarification depth tests are carried out and are acceptable as specified in the Contract.
- o There is no direct flame in contact with the pavement.
- o There is no charring of the pavement occurring.
- o The fine aggregates added are dry and uniform.
- o There is no excess smoke.
- o The mix temperature meets the requirements as specified in the Contract.
- o Visually inspect the mat appearance for
 - o Uniform mixing,
 - o No segregation
 - o No flushing
 - o No lumps
- o Longitudinal and transverse joints are constructed as specified in the Contract.
- o Check the ring test results to verify the depth of HIR.
- o HIR mix is sampled and tested as specified in the Contract.
- o Compaction is carried out as specified in the Contract.
- o Visually check completed pavement for conformance with the Contract requirements

b. Full Depth Reclamation (FDR)

- o Check that the in-place materials are processed to the depths, widths and gradation as specified in the Contract.
- o Check that the composition of the blended material is visually uniform and is as specified in the Contract.
- o Check that oversized material has been removed or reprocessed as specified in the Contract.
- o Check that surface shaping and compaction is as specified in the Contract.

c. Cold-In-Place Recycling (CIR)

- o Mix design and material submissions meet the requirements as specified in the Contract.
- o Material supplied by the Contractor is sampled as specified in the Contract.
- o Pavement is prepared as specified in the Contract.
- o Compaction is carried out as specified in the Contract.
- o The ambient temperature meets the requirements as specified in the Contract.
- o Check that the CIR material.
 - o Has been mixed properly.
 - o Contains no oversize particles.
 - o Processed material is not slumping.
- o CIR material is sampled and tested as specified in the Contract.
- o Traffic is restricted as specified in the Contract.
- o Check that CIR pavement meets requirements as specified in the Contract prior to placement of the wearing surface.

5.0 Surface Treatment

- o Check the condition of the grade for
 - o Compaction
 - o Profile
 - o Potholes
 - o Repair areas
 - o Removal of float (loose gravel)
- o Check all the delivered material supplied is approved.
- o Check that material supplied by the Contractor is sampled as specified in the Contract.
- o Check and record the following.
 - o Binder and aggregate distribution and application rate
 - o Width and application rate
 - o Emulsion temperature
 - o Air temperature
- o Check overlap of centerline and transverse joints
- o Two pneumatic-tired rollers shall make two passes each within 300m of the aggregate spreader. A steel drum roller shall replace one pneumatic-tired roller and only make one pass when surface treatment is on a prepared granular base.
- o Brooming off excess aggregate at time specified in the Contract.
- o Check that material is confined to the area specified in the Contract.
- o Have temporary traffic lines been placed prior to opening to traffic?

6.0 Common Problems, Causes and Mitigations

a. Plant Mix Discharge Temperatures Too Low

- o Moisture in the stockpile may be higher than initially planned. Decrease the production rate.

b. Uncoated Aggregate in the Plant Mix

- o Moisture may be in the aggregate.
- o Worn or missing flights may be in the hot-plant drum dryer.
- o Mixing time may be too short (check slope of drum for drum mix plants).

c. Segregation in the Mix

- o Use multiple drops instead of a single drop when loading the trucks from the hot-mix plant storage silo.
- o The haul truck should raise the truck bed slightly to break the load before unloading into the paver hopper.
- o Paver wings should not be folded on every load, or not at all. Material that builds up in the wings should be properly disposed of at the end of the day. When the paver wings are folded, do it slowly and be sure mix remains above the flow gates.
- o Keep a constant head of material to the paver's auger and screed.
- o Paver screed extension use should conform to paver manufacturer recommendations and agency requirements. Watch for segregation in areas where long extensions are used.
- o Harsher or stiffer mixes will require more care when placing and compacting.

d. Lack of In-Place Density

- o The aggregate gradation may be outside of the target gradation.
- o Actual asphalt content may be too low.
- o Roller pattern or the frequency or amplitude of the vibratory roller may need adjusting.
- o Plant mix temperature may be below optimal rolling temperatures.
- o Check the density of the underlying mat, which will influence nuclear gauge readings on thin overlays.
 - If this is the case, a control strip can determine the maximum achievable density.
- o Nominal maximum aggregate size may be too large for lift thickness. Use different mix or increase thickness.

e. Plant Mix Has a Lean or Dull Appearance

- o The mix may contain too little asphalt or an excess of minus No. 200 sieve.

f. Plant Mix Slumped in the Haul Truck

- o May be excessive asphalt or moisture.

g. Tears in the Plant Mix after Rolling

- o Tearing of the surface occurs if the mix is too cold, too dry, has too many fines, has excess moisture, or has been over-rolled.

h. Poor Surface Smoothness or Rough Ride

- o Multiple stop-starts of the paver
- o Excessive paver speed
- o Improper use of manual screed controls
- o Vibratory rollers operating at excessive speed (impacts spaced too far apart).
- o Poor joint construction practices

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Prepared for:

