

Suggested Field Considerations

The following field considerations are a guide to the important aspects of patching or edge repair. These issues should be determined as required before, during, and after construction. The appropriate staff to do this will vary by job type and size. Some topics may need attention from several staff members. The intent is not to form a report, but to bring attention to important aspects and components of the project process.

Note that some specifications described in the following content may not be the same as the specifications followed by your agency. Always check with your State agency's standards and specifications when using these guidelines.

Sections

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- **Material Checks**
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- **Equipment Inspections**
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Preliminary Considerations

Project Review

- What is the extent of the potholes?
- What caused them?
- Is base failure extensive?
- Are pothole patches or dig outs required?
- Will a surface treatment be needed after the repair?
- What is the traffic level?
- Is the majority of the base sound and well drained?

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- What time of year will repairs be performed?
- Is a temporary or permanent patch required?
- Will the patch require an edge seal?
- Review project for quantities of materials required.

Document Review

- Material specifications
- Dig out/patching methods
- Required special provisions
- Construction manual
- Traffic control plan (TCP)

Material Checks

Emulsion Injection or Cold-mix Patching

- Are the materials compatible with the job requirements?
- Is the emulsion produced by an approved source?
- Has the delivered emulsion been sampled and submitted for testing?
- Does the aggregate meet all specifications and is it clean and free of deleterious materials (sand equivalent)?
- Is the aggregate damp, but not wet?
- Is the emulsion warm to the touch but not hot?
- Is the tack emulsion suitable for the climatic conditions?
- Is the cold-mix within specifications?
- Is the cold-mix workable at the required temperatures?

Special Cold-mix Patching

- Are the materials compatible with the job requirements?
- Are the materials within specification?
- Is the tack emulsion within specification?

Hot Mix Asphalt (HMA) Patching

- Are the materials compatible with the job requirements?
- Is the tack emulsion produced by an approved source?
- Has the delivered emulsion been sampled and submitted for testing?
- Is the HMA made to specification?
- Is the HMA workable in the climatic conditions used?

Dig Outs and Edge Repairs

- Are the materials compatible with requirements?
- Is the emulsion produced by an approved source?
- Has the delivered emulsion been sampled and submitted for testing?
- Is the mix used for reinstatement within specification?
- Is the base course material within specification?

Skin Patching

- Are the materials compatible with requirements?
- Is the emulsion produced by an approved source?
- Has the delivered emulsion been sampled and submitted for testing?
- Is the aggregate clean, dry, and properly graded?
- Is the base course material within specification?

Pre-seal Inspection Responsibilities

Surface Preparation

- Are the edges of potholes or dig outs straight and free of debris?
- Has the existing surface been inspected for drainage problems?
- For dig outs, has all failed material been removed?

Equipment Inspections

Injection Patching Machine

- Is the machine fully functional?
- Is the equipment free of leaks (hydraulic oil, diesel, motor oil, etc.)?
- Does the aggregate flow freely?
- Does the emulsion flow freely?
- Is the compressor working properly?

Dig Out Cold Planers

- Is the machine fully functional?
- Are the cutting tips sharp and do they make a clean cut without spalling the edges?
- Is the equipment free of leaks (hydraulic oil, diesel, motor oil etc.)?

Pothole Patchers – HMA/Cold Mix

- Is the equipment free of leaks (hydraulic oil, diesel, motor oil etc.)?
- Are heating systems working and able to accurately control mixing temperature?
- Are all conveyors working?
- Are the hoses for applying tack coat working properly? Is the tack coat being applied at the correct rate?

Skin Patching

- Is the equipment free of leaks (hydraulic oil, diesel, motor oil, etc.)?
- Are the heating systems working and accurately controlling the mix temperature?
- Can the hand spray line or boot truck spray be properly controlled?
- Is aggregate spreading being properly controlled?

Compaction Devices

- Is the equipment free of leaks (hydraulic oil, diesel, motor oil, etc.)?
- Are tandem or other rollers in working order and do they meet specification requirements?
- Are compaction measurement devices (such as nuclear gauges) in working order?

Weather Requirements

- Have the air and surface temperatures been checked at the coolest location on the project and do they meet agency requirements?
- Application of patching does not begin if rain or snow is likely.
- Emulsion type applications should not start if freezing temperatures are expected.

Traffic Control

- The signs and devices used match the traffic control plan.
- The work zone complies with agency requirements.
- Flaggers do not hold the traffic for extended periods of time.
- Signs are removed or covered when they no longer apply.

Project Inspection Responsibilities

Injection Patching

- Does the operator have the correct safety equipment?
- Is the weather going to be dry and above freezing for at least 48 hours after patching?
- Are the aggregate and emulsion within specification?
- Is there enough emulsion and aggregate available? Is the aggregate clean and dry and within specification?
- Are the holes to be patched in a stable pavement? Are they dry?
- Do the holes have vertical and clean sides?

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- Is the tack coat applied evenly and only 0.04 in. thick?
- Does the aggregate flow evenly into the hole?
- Does the emulsion evenly coat the aggregate?
- Is the hole finished with a layer of aggregate?
- Does the mixture show signs of curing (turn black) within the first 10 minutes?
- Is the application stopped as soon as any problems are detected?
- Does the application of the patching material appear uniform?
- Does the surface have an even and uniform texture?
- Check application rate based on amounts of aggregate and emulsion used.
- What is the time between spreading the finishing aggregate and opening to traffic?
- Adjust work time, emulsion level, or mixture temperature to allow opening to traffic.

❑ Cold-mix Patching: Throw and Go

- Does the operator have the correct safety equipment?
- Is the weather going to be dry and above freezing for at least 48 hours after patching?
- Is the mix and tack emulsion within specification?
- Is there enough emulsion and mixture available? Is the mixture workable at the application temperatures?
- Are the holes to be patched in a stable pavement? Are they dry? Is there debris in the hole?
- Is the tack coat sprayed evenly and no more than 0.04 in. thick?
- Does the mix fill the holes evenly?
- Are multiple lifts required, hole depth > 4 in.?
- Finished patches should be slightly crowned to allow for secondary compaction produced by traffic.
- Does the mixture compact satisfactorily?
- Is the surface finish even and uniform?
- Do tires pick up the final surface? If so, dust with aggregate or sand.

❑ Cold-mix Patching: Dig Outs and Edge Repairs

- Does the operator have the correct safety equipment?
- Is the weather going to be dry and above freezing for at least 48 hours after patching?
- Is the mix and tack emulsion within specification?
- Is there enough emulsion and mixture available? Is the mixture workable at the anticipated application temperatures?
- Are the holes to be patched in clean, dry, and in a stable pavement?
- For edge repairs, is the pavement edge clean and not spalled?
- Is the tack coat sprayed evenly and no more than 0.04 in. thick?
- Does the mix fill the holes evenly?
- Are multiple lifts required with the repair depth exceeding 4 in.?
- Finished patches should be slightly crowned to allow for secondary compaction produced by traffic.
- Does the mixture compact satisfactorily?
- Do the rollers allow for a good surface profile?
- Is the surface finish even and uniform?
- Do tires pick up the final surface? If so, dust with aggregate or sand.

❑ HMA Patching: Throw and Go

- Does the operator have the correct safety equipment?
- Is the weather going to be fair and above freezing for at least 48 hours after patching?
- Is the mix and tack emulsion within specification?
- Is there enough emulsion and mixture available? Is the mixture workable at the application temperatures?
- Are the holes to be patched in clean, dry condition? Are they in a stable pavement?
- Is the tack coat sprayed evenly and no more than 0.04 in. thick?
- Does the mix fill the holes evenly?
- Are multiple lifts required, hole depth > 4 in.?

- Finished patches should be slightly crowned to allow for secondary traffic compaction.
- Does the mixture compact satisfactorily?
- Is the surface finish even and uniform?
- Do tires pick up the final surface? If so, dust with aggregate or sand.

HMA Patching: Dig Outs and Edge Repairs

- Does the operator have the correct safety equipment?
- Is the weather going to be dry and above freezing for at least 48 hours after patching?
- Is the mix and tack emulsion within specification?
- Are there enough emulsion and mixture available? Is the mixture workable at the temperatures of application? Is the mix hot enough?
- Where a pothole-patching machine is being used, does it keep the mix hot without degrading it?
- Are the holes to be patched in clean, dry condition? Are they in a stable pavement?
- For edge repairs and dig outs, are the edges straight and not spalled?
- Is the tack coat sprayed evenly and no more than 0.04 in. thick?
- Does the mix fill the holes evenly?
- Are multiple lifts required, hole depth > 4 in.?
- Finished patches should be slightly crowned to allow for secondary compaction produced by traffic.
- Does the mixture compact satisfactorily?
- Is the surface finish even and uniform?
- Do tires pick up the final surface? If so, dust with aggregate or sand.

Skin Patching

- Does the operator have the correct safety equipment?
- Is the weather going to be dry and above freezing for at least 48 hours after patching?
- Is the emulsion within specification?
- Is the aggregate clean, dry, and within specification?

- Is there enough emulsion and aggregate available?
- Are the holes to be patched in clean, dry condition? Are they in a stable pavement?
- Is the emulsion sprayed evenly and no more than 0.04 to 0.08 in. thick?
- Is the aggregate spread evenly over the road surface?
- Is the surface finish even and uniform?
- Do tires pick up the final surface? If so, dust with aggregate or sand.

❑ Rolling: (When required)

- Is the patch stable before rolling begins?
- Is the entire surface rolled only once?
- Do the rollers travel slowly—5 mph maximum. Do they pick up or tear the mat?
- Joints and overlaps may require extra passes in parking lot work especially.

❑ Crack Sealing

- Crack seal all seams
- Fog seal patch surface

❑ Opening the Patching to Traffic

- The traffic travels slowly—25 mph or less—over the fresh patches.
- Reduced speed limit signs should be used when pilot cars are not used.
- Remove all construction-related signs when opening to normal traffic.

❑ Clean Up

- All loose patching material should be removed from the travel way.
- Remove binder application or spills from all areas including curbs, sidewalks, and radius applications.