

**CONSTRUCTION INSPECTOR'S CHECKLIST
FOR
PAVEMENT PATCHING**

This checklist has been prepared to provide the field inspector with a summary of easy-to-read step-by-step requirements relative to the proper construction of pavement patching (Section 442 of the Standard Specifications). The following questions are based on and referenced to information found in the Standard and Supplemental Specifications, Highway Standards, and appropriate sections of the Construction Manual.

Have you reviewed the contract Special Provisions, Supplemental Specifications and Plans? _____

1. TRAFFIC CONTROL AND PROTECTION

If the road is to remain open to traffic during the patching operations, are the protective devices as specified in Article 701.17(e) being furnished? (Art. 442.04) _____

a. Are you studying the plan traffic control standards, contract special provisions, and preconstruction conference minutes to determine the positioning of signs and flaggers and how the Contractor is to be paid for this work? _____

b. Are you preparing Form [OPER 725](#), "Traffic Control Authorization Request" and submitting it to the District Traffic Engineer? _____

c. Is the Contractor keeping all vehicles and/or nonoperating equipment parked away from the moving traffic stream in conformance with the following? _____

(1) During working hours; 8 feet (2.5 m) from pavement if parked for 2 hours or less. (Art. 701.11) _____

(2) During nonworking hours; 30 feet (9 m) ROW permitting. Otherwise, 15 feet (4.5 m) from pavement. (Art. 701.11) _____

(3) In addition to the above requirements, is the Contractor keeping all equipment, materials and vehicles off of the shoulder on the side of the pavement that is open to traffic? (Art. 701.08) _____

- d. Flaggers - Are two flaggers being furnished at each separate operation (two lane pavements)? Is one flagger being furnished at each separate activity of an operation that requires frequent encroachment in a lane open to traffic where traffic is restricted to less than the normal number of lanes on a multilane pavement? (Art. 701.13) Are they equipped with vests and approved warning signs? (Art. 701.13) _____
- e. Are flaggers being provided whenever there is a lane closure (not controlled by temporary traffic signals) on 2-lane, 2-way pavement? (Art. 701.13). Overnight lane closures on 2-lane roadways and ramps are not allowed except conditions beyond the Contractor's control. (Art. 701.17(e)(2)b.) _____
- f. Are the flaggers certified and have in their possession a current flagger certification I.D.? (Art. 701.13) _____
- g. On two-lane pavements when one-way traffic is being maintained, are construction operations confined to one traffic lane, leaving the opposite lane open to traffic? (Art. 701.17(e)(1)) (On four-lane pavement, one traffic lane in each direction must be open to traffic throughout the period of construction.) _____
- h. Is Traffic Control Surveillance ([Form BC 2240](#)) being furnished by the Contractor to inspect the barricades, lights, signing, etc. at least once every four hours during all hours that the Contractor is not working? (Art. 701.10) The form will be supplied to the Contractor by the Engineer. _____
- i. Are you periodically driving through the job to check the effectiveness of the Contractor's traffic control devices? _____
- j. Are you reviewing [Section 700](#) in the Construction Manual for traffic control inspection and reporting frequencies? _____

All inspections shall be recorded on form [BC 726](#), **Traffic Control Inspection Report**. When major deficiencies are corrected, a small note stating that the correction was made along with the date and initials shall be added to the form which cited the deficiency, or in the project diary.

2. PAINTING PATCH LIMITS

- a. Initial Layout:

Prior to the Contractor beginning work, are you marking the pavement with abbreviated white paint marks at all locations where patching is required? _____

After you measure and calculate areas for all your marks, are you contacting your construction office for permission to add to, delete from, or to proceed with your patching quantities? _____

b. Confirmed Patches:

After your patch locations have been confirmed, are you painting the limits of all authorized patches in white and informing the Contractor that payment cannot be made for any unauthorized removal and replacement that extends past the paint marks? (Art. 442.10) _____

c. Protection:

When marking patches under traffic, is the operation being protected with flaggers and flashing vehicle lights? (Std. 701301) _____

Are you reviewing [Section 105.10b](#) and [105.10c](#) in the Construction Manual for information concerning Project Personnel Operation and Safety and Traffic Control for State Construction Personnel? _____

3. PATCH GEOMETRIC LIMITATIONS

Are your painted patch limits conforming to the requirements shown on the plans and/or standards? _____

4. PATCHING FIELD BOOK

Is your job patching book being set up to record:

a. Patch number (1,2,3,---n) _____

b. Lane of traffic. (NB, SB, EB, WB) _____

c. Size of patch. (m² (sq. yds.) w/comps) _____

d. Class of patch. _____

e. Average thickness of patch. _____

f. Type of patch.	Type I = Less than 5 sq. yds. (5 m ²)	_____
	Type II = 5 sq. yds. (5 m ²) or more, but less than 15 sq. yds. (15 m ²)	_____
	Type III = 15 sq. yds. (15 m ²) or more, but less than 25 sq. yds. (20 m ²)	_____
	Type IV = 25 sq. yds. (20 m ²) or more	_____

- g. Preliminary measurements (From paint marks). _____
- h. Final measurements (From open hole, but not to exceed paint marks without permission). _____

Additional Information Required for Class A and B and C Patches

- i. Mandatory saw cut lengths (Class A and B) _____
- j. Dowel bar count (Class B) _____
- k. Tie bar count (Class A, B, and C) _____
- l. Reinforcement bars area (Class A) _____
- m. Pavement fabric area (Class B) _____

5. PLANT & MATERIALS APPROVAL

Has the plant where the concrete is to be produced been approved? (Art. 1103.02) _____

Has the plant where the bituminous mixture is to be produced been approved? (Art. 1102.01) _____

Are approved Hot Mix Asphalt designs in the project files? (Art. 1030.04) _____

Has the Contractor notified you of his/her proposed sources of materials prior to delivery? (Art. 106.01) _____

Has all material been inspected, tested and approved before incorporation in the work? (Art. 106.03) _____

6. CLASS "A" PATCHES

Pavement Removal and Continuously Reinforced Portland Cement Concrete Replacement

- a. Scoring:
 - (1) If the pavement is to remain open to traffic, is the scoring of the patch perimeter being done not more than 3 days prior to the removal operation? (Art. 442.05) _____
 - (2) Are two transverse saw cuts being made perpendicular to the centerline and at each end of the patch? (Art. 442.05(a)) _____

(3) Are the partial depth saw cuts located at the outside patch edge to a depth which is just above the longitudinal reinforcement? (Art. 442.05(a)) _____

(These saw cuts should be located not closer than 18 inches (450 mm) from the nearest tight transverse crack in pavement which is to remain. However, where cracks are very closely spaced it is sometimes necessary to place the patch edge as close as 6 inches (150 mm) to an existing tight transverse crack. If this condition exists, discuss the situation with your supervisor.) _____

(4) Are the interior saw cuts full-depth or to a depth which will completely sever the longitudinal reinforcement and located from the patch edge as shown in the plans and/or standards? (Art. 442.05(a)) _____

(5) Are the longitudinal edges of the patch formed by full depth saw cuts? (Art. 442.05(a)) _____

(6) Are you prohibiting saw cut extensions into pavement that is to remain in place? (Art. 442.05(a)) _____

(7) Are all saw cuts being made with an approved saw? (Art. 442.05(a)) _____

b. Breaking and Removal:

(1) Is the pavement between the full-depth saw cuts being removed by lifting? (Art. 442.05(a)) _____

(2) Is the Contractor exercising sufficient care to minimize subbase disturbance and prevent spalling of the pavement that is to remain in place? (Art. 442.05(a)) _____

(3) If you determine that the concrete has deteriorated to the extent that it is not practical to lift, is the pavement being broken into small pieces with equipment which shall not transfer an impact energy greater than 3,000 foot-pounds (4000 Joules) per blow to the pavement surface? (Art. 442.05(a)) _____

(Breaking shall be used as a last resort. The breaking of one patch should not automatically waive the lifting requirement for other patches.)

(4) Is the concrete in the splicing area (between the full-depth and partial depth saw cuts) being removed using hand held hammers and hand tools? (Art. 442.05(a)) _____

If the contractor chooses to use the skid steer loader equipped with a hydraulic hammer does the hydraulic hammer have a maximum impact energy of 300 ft.-lbs. (410 J) and a maximum total mass (weight) of 475 lbs. (215 kg)? (Art. 442.03 & Art. 442.05) _____

(5) To prevent underbreaking, is the face of the concrete below the partial-depth saw cut being inclined slightly into the patch? (Art. 442.05(a)) _____

(6) After removal, are you inspecting the pavement structure to determine if it is sufficiently sound? _____

(7) Is the patch being extended when the Contractor's operations cause a spall having a width or depth greater than 1 inch (25 mm), shattering, or underbreaking in the pavement to remain in place at no cost to the Department? (Art. 442.05(a)) _____

c. Building Up Subbase:

(1) Is the subbase material disturbed during pavement removal operations or determined unsuitable by the Engineer being removed and replaced with patch material? (Art. 442.05(a)) _____

(2) If the subbase and subgrade material have been disturbed and/or removed to a depth in excess of plan pavement thickness plus subbase thickness from the surface of the pavement, is the concrete being placed in lifts, separated by a bond breaker and cured at least 1 day before completing the patch? (Art. 442.06(d)) _____

NOTE: The bond breaker may be Type III (white) membrane curing compound or rapid setting asphalt emulsion.

d. Forms:

(1) Is the edge of pavement being formed full-depth with metal forms or nominal 2 inch (50 mm) thick wood forms? (Art. 442.03 Note 2, Art. 1103.05 & Art. 442.06(c)) _____

(2) Is the centerline joint being formed by Method 1 or 2 of Article 442.06(b)? _____

e. Reinforcement:

- (1) Is the patch being extended at no additional cost to the Department if more than 10 percent of the reinforcing steel in the splice area is damaged due to the Contractor's operations? (Art. 442.05(a)) _____
- (2) Are you inspecting the existing reinforcement steel for excess rusting or evidence of steel distress? If found, are you extending the patch? (Art. 442.05(a)) _____
- (3) Is the steel being placed as shown on the plans? (Art. 442.06(a)(1)) _____
- (4) Is each lap splice being tied with two secure ties? (Art. 442.06(a)(1)) _____
- (5) Is the reinforcement steel being placed and supported on chairs in accordance with Article (421.06(a)) such that the unsupported lengths do not exceed 4 feet (1.2 m)? (Art. 442.06(a)(1)) _____
- (6) Is any uneven subbase being adjusted so that the reinforcement steel tolerance of ± 1 inch (25 mm) vertically is being met? (Art. 442.06(a)(1)) _____
- (7) Are patches, including half lane patches, 20 ft (6 m)) or longer tied to the adjacent lane of existing pavement, pcc shoulders, and curb and gutter with No. 6 (No. 20) transverse tie bars, 24 inches (600 mm) long embedded 8 inches (200 mm) at 24 inch (600 mm) centers according to Article 420.05(b) of the Standard Specifications? (Art. 442.06(a)(1)) _____

f. Prepour Inspection:

Prior to concrete placement, are you:

- (1) Check measuring the depth of patch? _____
- (2) Measuring the patch area for final documentation? _____

g. Concrete Placement:

- (1) Are you checking to see if the Contractor is using the proper class of concrete? (Art. 1020.04) _____

- (2) Do the coarse aggregate gradation, slump, and air content meet the requirements of Article 1020.04 for the specific class of concrete used? (Table 1 of Art. 1020.04) _____
- (3) If used, are admixtures added to the concrete according to Article 1020.05(b)? _____
- (4) Is the concrete being placed in accordance with Article 420.07? (Art. 442.06(d)) _____
- (5) Are the temperature requirements of Article 1020.14 being met? (Art. 442.06(d)) _____

h. Concrete Consolidation and Finishing:

- (1) Is the concrete being consolidated by internal vibration with special attention given to the corners, edges and reinforcement? (Art. 442.06(e)) _____
- (2) Is the surface of the patch being struck-off with two passes of a vibratory or rolling screed? (Art. 442.06(e)) _____
- (3) Is the surface of the concrete being tested for trueness by means of a 10 foot (3 m) straightedge in accordance with Article 420.09(c)? (Art. 442.06(e)) _____
- (4) Does the final finish match the surrounding pavement if it has not been overlayed? Is the patch surface broomed when the pavement has been overlayed? (Art. 442.06(f)) _____
- (5) Are the patch surfaces being cured for 3 days by one of the following methods? (Art. 1020.13, Index Table, Art. 442.06(g), Section 1022)
 - (a) Waterproof paper method? (Art. 1020.13(a)(1)) _____
 - (b) Polyethylene sheeting method? (Art. 1020.13(a)(2)) _____
 - (c) Wetted burlap method? (Art. 1020.13(a)(3)) _____
 - (d) Membrane curing method - As soon as water sheen has disappeared, are 2 separate applications, separated by at least one minute, of Type II (red) curing compound (Art. 1022.01) being uniformly applied at one gallon/250 sf (0.16 L/m²)/application? (Art. 1020.13(a)(4)) _____

Is the spraying device of at least 5 gallon (20 L) capacity and maintained with constant pressure by mechanical means? (Art. 1101.09(b)) _____

(e) Wetted Cotton Mat Method? (Art. 1020.13(a)(5) _____

i. Sealing Joints:

Are the centerline and longitudinal joints adjacent to PCC shoulders being sealed in accordance with Article 420.12? (Art. 442.06(i)(1) _____

NOTE: Not required if bituminous resurfacing is on the same contract.

7. **CLASS "B" PATCHES**

Pavement Removal and Jointed Portland Cement Concrete Replacement Using Dowels.

a. Scoring:

(1) If the pavement is to remain open to traffic, is the scoring of the patch perimeter being done not more than 3 days prior to the removal operation? (Art. 442.05) _____

(2) Are two transverse full-depth saw cuts being made to outline the patch? Are they straight and perpendicular to the centerline, with a tolerance of 2 inches (50 mm) in 12 feet (3.6 m)? (Art. 442.05(b)) _____

Is the wedge of pavement formed by the interior (third) saw cut removed with a hand held hammer and hand tools prior to pavement liftout? (Art. 442.05(b)) _____

(3) Are you prohibiting saw cut extensions into pavement that is to remain in place? (Art. 442.05(b)) _____

(4) Are all saw cuts being made with an approved concrete saw? (Art. 442.05(b)) _____

(5) Are only full lane width patches being permitted? (Art. 442.05(b)) _____

b. Breaking and Removal:

(1) Is the pavement being removed by lifting? (Art. 442.05(b)) _____

(2) Is the Contractor exercising sufficient care to minimize subbase disturbance and prevent spalling of the pavement that is to remain in place? (Art. 442.05(b)) _____

(3) If you determine that the concrete has deteriorated to the extent that it is not practical to lift, is the pavement being broken into small pieces with equipment which shall not transfer an impact energy greater than 3000 foot-pounds (4000 J) per blow to the pavement surface? (Art. 442.05(b)) _____

(Breaking shall be used as a last resort. The breaking of one patch should not automatically waive the lifting requirement for other patches.)

(4) After removal, are you inspecting the pavement structure to determine if it is structurally sound? (Art. 442.05(b)) _____

(5) Is the patch being extended when the Contractor's operations cause a spall having a width or depth greater than one inch (25 mm) in the pavement to remain in place, at no cost to the Department? (Art. 442.05(b)) _____

Note: Extending the patch to remove spalls is not required if the pavement is to be resurfaced with HMA.

c. Building Up Subbase:

Is the subbase material disturbed during pavement removal operations or determined unsuitable by the Engineer being removed and replaced with patch material? (Art. 442.05(b)) _____

d. Joints:

Are all expansion joints being replaced if required by the plans and/or standards? (Art. 442.07) _____

e. Forms:

(1) Is the edge of pavement being formed full-depth with metal forms or nominal 2 inch (50 mm) thick wood forms? (Art. 442.03 Note 2, Art. 442.06(c) & Art. 1103.05) _____

(2) Is the centerline joint being formed by Method 1 or 2 of Article 442.06(b)? _____

(3) Is a 1/4 inch (6 mm) bond breaker being placed at the centerline for the full length and depth of the patch? (Art. 442.06(c)(2)) _____

(4) Are the sealant reservoirs at patch boundaries being installed? (Art. 442.06(c)(2)) (See plans and/or standard) _____

f. Reinforcement and Dowel Bars:

- (1) Are dowel holes being drilled at mid-depth of the existing pavement, excluding overlays and spaced as shown on the plans and/or standard? (Art. 442.06(a)(2)) _____
- (2) Does the drilling machine have a positive stop to control the depth of hole? (Art. 442.03 Note 6) _____
- (3) Are the dowel holes parallel to the grade and centerline of the pavement with a tolerance of 1/8 inch (3 mm) in 12 inches (300 mm)? (Art. 442.06(a)(2)) _____
- (4) Are dowel holes being cleaned of dust and debris with a power brush/blower or with compressed air? (Art. 442.06(a)(2)) (Dowel bar protrusion shall be 9 ± 0.5 inches.) _____
- (5) Are the chemical adhesive and dowel bars being installed in accordance with Article (Art. 442.06(a)(2))? _____
- (6) Are the dowel bars being cleaned and lightly oiled immediately prior to concrete placement? (Art. 442.06(a)(2)) _____
- (7) Are patches 20 ft. (6 m) or longer tied to the adjacent lane of existing pavement, pcc shoulders, and curb and gutter with No. 6 (No. 20) transverse tie bars, 24 inches (600 mm) long embedded 8 inches (200 mm) at 24 inch (600 mm) centers according to Article 420.05(b) of the Standard Specifications? (Art. 442.06(a)(2)) _____

g. Pre-pour Inspection:

Prior to concrete placement are you:

- (1) Check measuring the depth of patch? _____
- (2) Measuring the patch area for final documentation? _____

h. Concrete Placement:

- (1) Are you checking to see if the Contractor is using the proper class of concrete? (Art. 1020.04) _____
- (2) Do the coarse aggregate gradation, slump, and air content meet the requirements of Article 1020.04 for the specific class of concrete used? (Table 1 of Art. 1020.04) _____
- (3) If used, are the admixtures being added to the concrete according to Article 1020.05(b)? _____
- (4) Is the concrete being placed in accordance with Article 420.07? (Art. 442.06(d)) _____

(5) Are the temperature requirements of Article 1020.14 being met? (Art. 442.06(d)) _____

i. Concrete Consolidation and Finishing:

(1) Is the concrete being consolidated by internal vibration with special attention given to the corners, edges and reinforcement? (Art. 442.06(e)) _____

(2) Is the surface of the patch being struck off with two passes of a vibratory or rolling screed? (Art. 442.06(e)) _____

(3) Is the surface of the concrete being tested for trueness by means of a 10 foot (3 m) straightedge in accordance with Article 420.09(c)? (Art. 442.06(e)) _____

(4) Does the final finish match the surrounding pavement if it has not been overlaid? Is the patch surface broomed when the pavement has been overlaid? (Art. 442.06(f)) _____

(5) Are the patch surfaces being cured for 3 days by one of the following methods? (Art. 1020.13, Index Table, Art. 442.06(g), Section 1022)

(a) Waterproof paper method? (Art. 1020.13(a)(1)) _____

(b) Polyethylene sheeting method? (Art. 1020.13(a)(2)) _____

(c) Wetted burlap method? (Art. 1020.13(a)(3)) _____

(d) Membrane curing method - As soon as the water sheen has disappeared, are 2 separate applications, separated by at least one minute, of Type II (red) curing compound (1022.01) being uniformly applied at the rate of one gallon/250 sf (0.16 L/m²)/application? (Art. 1020.13(a)(4)) _____

Is the spraying device of at least 5 gallon (20 L) capacity and maintained with constant pressure by mechanical means? (Art. 1101.09(b)) _____

(e) Wetted Burlap Method? (Art. 1020.13(a)(5)) _____

j. Joint Sealing:

Are all sealant reservoirs being filled in accordance with Article 420.12 and the manufacturer's recommendations? (Art. 442.06(i)(2)) _____

NOTE: Joint Sealing not required if bituminous resurfacing is on the same contract.

8. CLASS "C" PATCHES

Pavement Removal and Portland Cement Concrete Replacement.

a. Scoring:

(1) If the pavement is to remain open to traffic, is the scoring of the patch perimeter being done not more than 3 days(1 day if a wheel saw is used) prior to the removal operation? (Art. 442.05) _____

(2) Standard Reinforced Concrete Pavement

Is the saw cut for scoring being made deep enough to cut the reinforcement? (Art. 442.05(c)) _____

(3) Non-Reinforced Concrete Pavement

(a) Is the scoring of sufficient depth to provide a weakened plane so that the hammer will not fracture or distress remaining pavement? _____

(b) If jackhammers are used, is the scoring being done not closer than 6 inches (150 mm) from the marked face? (Art. 442.05(c)). (Exception: If resurfacing follows, scoring may be done directly over the marked face of the patch.) _____

(c) If marginal bars are present in the pavement, are they being exposed and cut (Article 442.05(c), the holes properly backfilled and all broken concrete removed prior to opening to traffic? (Art. 442.05) _____

(d) If a wheel saw is used to score the pavement the day before removal is to begin, are the cuts filled according to Article 442.05? _____

b. Breaking and Removal:

(1) Are you ensuring that breaking equipment does not transfer an impact energy greater than 3,000 foot-pounds (4000 J) per blow to the pavement surface? (Art. 442.05(c)) _____

(2) Are you ensuring that the equipment and methods used for removing old pavement are such as to prevent cracking, shattering or spalling of the pavement remaining in place? (Art. 442.05(c)) _____

(3) Is all broken pavement being removed disposed of daily according to Article 202.03? (Art. 442.05) _____

c. Trimming the Patch:

(1) Is the patch face being trimmed with hand tools or other equipment approved by the Engineer? (Art. 442.05(c)) _____

(2) Is the vertical face of patch, from top to bottom, within a 1 1/2-inch (40 mm) vertical plane? (Abrupt breaks or deviations induce spalling) (Art. 442.05(c)) _____

d. Forms:

(1) Is the edge of pavement being formed full-depth with metal forms or nominal 2-inch (50 mm) thick wood forms? (Art. 442.03, Note 2 & Art. 1103.05) _____

(2) Is the centerline joint being formed by Method 1 or 2 of Article 442.06(b)? _____

e. Building Up Subbase:

(1) Are all areas of subbase that are below the required elevation of the finished subbase being built up with compacted granular material, concrete or compacted hot mix asphalt at no additional cost to the Department? (Art. 442.05(c)) _____

(2) If the material in the subgrade is unsuitable, is it being removed and replaced with satisfactory material and paid for in accordance with Article 109.04? (Art. 442.11) _____

g. Joints:

Are all expansion joints being replaced if required by the plans and/or standards? (Art. 442.07) _____

h. Prepour Inspection:

Prior to concrete placement are you:

(1) Check measuring depth of patch? _____

(2) Measuring the patch area for final documentation? _____

i. Concrete Placement:

(1) Are you checking to see if the Contractor is using the proper class of concrete? (Art.1020.04) _____

(2) Do the coarse aggregate gradation, slump, and air content meet the requirements of Article 1020.04 for the specific class of concrete used? (Table 1 of Art. 1020.04) _____

(3) If used, are the admixtures being added to the concrete according to Article 1020.05(b)? _____

(4) Is the concrete being placed in accordance with Article 420.07? (Art. 442.06(d)) _____

(5) Are the temperature requirements of Article 1020.14 being met? _____

j. Concrete Consolidation and Finishing:

(1) Is the concrete being consolidated by internal vibration with special attention given to the corners, edges and reinforcement? (Art. 442.06(e)) _____

(2) Finishing may be performed by either machine or hand methods. (Art. 442.06(e)) _____

(3) Is the surface of the concrete being tested for trueness by means of a 10 foot (3 m) straightedge in accordance with Article 420.09(c)? (Art. 442.06(e)) _____

(4) Does the final finish match the surrounding pavement if it has not been overlaid? Is the patch surface broomed when the pavement has been overlaid? (Art. 442.06(f)) _____

(5) Are the patch surfaces being cured for 3 days by one of the following methods? (Art. 1020.13, Index Table) _____

(a) Waterproof paper method? (Art. 1020.13(a)(1)) _____

(b) Polyethylene sheeting method? (Art. 1020.13(a)(2)) _____

(c) Wetted burlap method? (Art. 1020.13(a)(3)) _____

(d) Membrane curing method - As soon as water sheen has disappeared, are 2 separate applications, separated by at least one minute, of Type II (red) curing compound (Art. 1022.01) being uniformly applied at the rate of one gallon/250 sf (0.16 L/m²) /application? (Art. 1020.13(a)(4)) _____

Is the spraying device of at least 5 gallon (20 L) capacity and maintained with constant pressure by mechanical means? (Art. 1101.09(b)) _____

(e) Wetted Cotton Mat Method? (Article 1020.13(a)(5)) _____

9. REQUIREMENTS COMMON TO CLASS “A”, “B”, AND “C” PATCHES

a. Revolutions:

Are you immediately observing the revolution counter on all arriving truck mixers to ensure that the required number of revolutions at mixing speed has been obtained? (Art. 1103.01(b)) _____

Does the number fit within the allowable number of revolutions shown in the table below? _____

Time Minutes	60 Mixing Revs. Required (Simultaneous Charging)		70 Mixing Revs. Required (Separate Charging)	
	Minimum	Maximum	Minimum	Maximum
10	60	119	70	119
15	66	144	72	144
20	76	169	82	169
25	86	194	92	194
30	96	219	102	219
35	106	244	112	244
40	116	269	122	269
45	126	294	132	294
50	136	319	142	319
55	146	344	152	344
60	156	369	162	369

b. Air Test (Manual of Test Procedures for Materials, Appendix C3):

Are you testing the concrete for air entrainment at least once each 50 cu. yd. (40 m³)? (Sampling Schedule 3 of the PPG or Special Provisions) Record and retain in job records. _____

c. Slump Test (Manual of Test Procedures for Materials, Appendix C3):

Are you testing the concrete for slump at least once each 100 cy yds (75 m³) with a minimum of 1 each day? (Sampling Schedule 3 of the PPG or Special Provisions) Record and retain in job records. _____

d. Strength Test (Manual of Test Procedures for Materials; Standard Method of Test for Making and Curing Concrete Test Specimens in the Field, and Appendix C3):

Are you casting 2 test specimens (6" x 6" x 30" beams) (150 mm x 150 mm x 750 mm) at the site of work daily? (Art. 1020.09& Art. 701.17(e)(3), Sampling Schedule 3 of the PPG) _____

Strength requirements = 600 psi (4.1 MPa) flexural strength,
(Article 701.17(e)(3)b.)

or;

= 3200 psi (22 MPa) compression strength,
(Article 701.17(e)(3)b.)

Report on Form MI-655, "P.C. Concrete Strengths.

Note: For contracts that include the Recurring Special Provision for QC/QA of Concrete Mixtures, testing frequencies will be according to the recurring special provision.

e. Smoothness Test (Art. 442.06(f))

Are you testing the completed patches for smoothness using a 10 ft. (3 m) straightedge set for 3/16" (5 mm)?

Are surface variations which exceed 3/16" (5 mm) being removed by the contractor with an approved grinding device? (Art. 442.06(e))

f. Opening to Traffic:

(1) Prior to opening to traffic are the side forms removed, shoulders backfilled with satisfactory compacted material, and all waste material removed from shoulders and adjacent row? (Art. 442.09 & Art. 701.17(e))

(2) Are all patches being opened to traffic as soon as a flexural strength of 600 psi (4.1 MPa) is reached by test specimen? (Art. 701.17(e)(3))

If a high early strength PCC mix that will obtain a flexural strength of 600 psi (4150 kPa) or a compressive strength of 3200 psi (22,100 kPa) in 16 hours is used, the patches shall be opened to traffic when the flexural strength reaches 300 psi (4150 kPa) or the compressive strength reaches 1600 psi (11,000 kPa). (Article 701.17(e)(3)b.)

During holiday periods, Article 107.09 applies.

On two lane roads and ramps, the lanes shall be opened before dark. The Contractor's operation shall be revised if this requirement cannot be met.

10. CLASS "D" PATCHES

Pavement Removal and Hot Mix Asphalt (HMA) Replacement

a. Scoring:

(1) If the pavement is to remain open to traffic, is the scoring of the patch perimeter being done not more than 3 days (1 day if a wheel saw is used) prior to the removal operation? (Art. 442.05) _____

(2) Standard Reinforced Concrete Pavement
Is the saw cut for scoring being made deep enough to cut the reinforcement? (Art. 442.05(c)) _____

(3) Non-Reinforced Concrete Pavement
(a) Is the scoring of sufficient depth to provide a weakened plane so that the hammer will not fracture or distress remaining pavement? _____

(b) If jackhammers are used, is the scoring being done not closer than 6 inches (150 mm) from the marked face? (Art. 442.05(c)) _____

(c) If marginal bars are present in the pavement, are they being exposed and cut (Article 442.05(c), the holes properly backfilled and all broken concrete removed prior to opening to traffic? (Art. 442.05) _____

(d) If a wheel saw is used to score the pavement the day before removal is to begin, are the cuts filled according to Article 442.05? _____

b. Breaking and Removal:

(1) Are you ensuring that breaking equipment does not transfer an impact energy greater than 3,000 foot-pounds (4000 J) per blow to the pavement surface? (Art. 442.05(c)) _____

(2) Are you ensuring that the equipment and methods used for removing old pavement are such as to prevent cracking, shattering or spalling of the pavement remaining in place? (Art. 442.05(c)) _____

(3) Is all broken pavement removed, disposed of daily according to Article 202.03? (Art. 442.05) _____

c. Trimming the Patch:

(1) Is the patch face being trimmed with hand tools or other equipment approved by the Engineer? (Art. 442.05(c)) _____

(2) Is the vertical face of patch, from top to bottom, within a 1 1/2 inch (40 mm) vertical plane? (Abrupt breaks or deviations induce spalling) (Art. 442.05(c)) _____

d. Building Up Subbase:

Are all areas of subbase that are below the required elevation of the finished subbase being built up with compacted granular material, concrete or compacted hot mix asphalt at no additional cost to the Department? (Art. 442.05(c))

If the material in the subgrade is unsuitable, is it being removed and replaced with satisfactory material and paid for in accordance with Article 109.04? (Art. 442.11)

e. Pre-Placement Inspection:

Prior to HMA placement are you:

(1) Check measuring depth of patch?

(2) Measuring the patch area for final documentation?

f. Filling Holes:

(1) Temperature Limitations:

Are HMA mixtures being placed only on days when the air temperature in the shade is 40° F (5°C) or more? (Art. 442.08(a))

Are you checking occasional truckloads of mixture to ensure that the delivery temperature is between 250° F and 350° F (120°C - 175°C)? (Art. 406.06(b))

(2) HMA Selection:

Is the Contractor filling each hole with lifts of HMA conforming to the requirements of Section 1030 of the Standard Specifications? (Art. 442.02(f))

(3) Truck Requirements:

Do the trucks hauling the mixtures meet the following requirements? (Art. 1030.08)

(a) Have tight and clean dump bodies?

(b) Completely insulated with at least 3/4 inch (20 mm) insulating material on all sides, ends and bottom of dump body when the air temperature is below 60°F (15°C)?

(c) Equipped with a cover of canvas that shall extend at least 12 inches (300 mm) over the sides and end of the dump body? It shall be used if any one of the following conditions are present:

(1) If ambient air temperature is below 60°F (15°C). _____

(2) If the weather is inclement. _____

(3) If the temperature of the dumped mixture is below 250°F (120°C). _____

Is the canvas rolled back at the time of dumping the HMA into the patch? _____

(4) Mixture Placement: (Art. 442.08(a))

Are the holes being filled and compacted in 2 lifts with a minimum lift thickness according to Article 406.06(d)? _____

If density cannot be obtained in 2 lifts, are subsequent patches being placed in three or more compacted lifts? _____

(5) Compaction: (Art. 442.08(a))

Is each lift being satisfactorily compacted with:

(a) A mechanical tamper or a vibrating tamper? _____

or;

(b) Self-propelled roller?

Note: When the self-propelled roller is used on lower lifts of patches of sufficient length, a mechanical tamper or a vibrating tamper will be required at areas inaccessible to the roller _____

or;

(c) A vibratory roller? _____

(6) Opening to Traffic:

Is the entire ROW adjacent to the patching area cleaned of waste material and the backfill along the pavement edge compacted before removing the barricades and opening the patched lane to traffic? (Art. 701.17(e)) _____

On two lane roads except for conditions beyond the Contractor's control, are all lanes opened to traffic at the conclusion of each day's work? (Art. 701.17(e)(2)) _____

(7) Density: (Art. 442.08(b))

After final compaction does the finished patch meet the density requirements in Article 1030.05(d)(4)? _____

Is the density being measured by nuclear testing methods or by core specimens? (Art. 442.08(d) & Art. 1030.05(d)(3)) _____

(8) Additional Compaction:

Are the patches opened to traffic for at least 3 days before paving operations are started? (Art. 442.08(c)) _____

(a) If HMA resurfacing is not being constructed, are the depressions in the patches being filled with hot mix asphalt and compacted? (Art. 442.08(d)) _____

(b) If HMA resurfacing is being constructed, are the depressions being filled and compacted as part of the first course of the resurfacing operation? (Art. 442.08(d)) _____

11. DOCUMENTATION OF CONTRACT QUANTITIES

Are the patches being measured, documented and paid for at the contract unit price per square yard (square meter) by one of the following specified classes and types:

- a. Class A Patches, Type I, II, III or IV (Include mandatory saw cuts lengths, tie bar count, and reinforcement area) _____
- b. Class B Patches, Type I, II, III or IV (Include mandatory saw cut lengths, dowel and tie bar counts, and pavement fabric area) _____
- c. Class C Patches, Type I, II, III or IV _____
- d. Class D Patches, Type I, II, III or IV _____
- e. Pavement Patching, Type I, II, III or IV _____
(When the pay item is pavement patching, the Contractor has the option of using either Class C or Class D Patches.)

The Final Pay Quantity shall be based upon the final measurement taken of the completed patch area in place or the authorized patch area, which ever is less, in square yards (square meters). (Art 442.10) Field measurements and computations must be recorded and kept on file. ([Documentation Section](#) of the Construction Manual)

Revised to conform with the
Standard Specifications for Road and Bridge Construction
Adopted January 1, 2007