

## Hot Bituminous Paving Checklist

1. Upon receipt of plans, specifications, and proposal.
  - A. Examine the Plans and make notes of any questions that you have. If there is a conflict Plans will govern over Standard Specifications. Supplemental Specifications will govern over plans.
    - a. Scope of work.
    - b. Get an overview of the paving to be done on the project to understand where the work is to be done.
  - B. Notes.
    - a. Read the General Notes to determine details that are project specific and not included in the specifications that apply to HBP Paving. Plan notes supersede specifications if there is a conflict.
  - C. Typical sections.
    - a. Typical sections are defined by their stationing. There may be more than one typical section on a project. Examine all typical sections.
    - b. New pavement thickness.
    - c. Cross slope of the paved surface.
    - d. Number of lifts needed to achieve thickness.
    - e. Locations where the typical section changes.
    - f. Type of HBP mix.
  - D. Basis of Estimate.
    - a. Plan quantity of Bid Items for the project. Bid Items are listed by specification section and code.
    - b. Density of material used to determine quantities.
    - c. Type and grade of asphalt cement.
    - d. Asphalt cement content used to determine quantities.
    - e. Type and grade of emulsified asphalt for tack coat.
    - f. Application rate of emulsified asphalt for tack coat.
    - g. Superelevation table to locate areas of super elevation. A table should be made for both ends of each transition showing stations and slopes for the start and end of the transitions and intermediate points to check to achieve a smooth transition.
  - E. Plan and Profile.
    - a. Check out how the paving fits in with other construction on the project.
    - b. Locate where the superelevations and transitions are located.
    - c. Locate fixtures that are to be adjusted prior to placing the final lift.
  - F. Paving Layout.
    - a. Check where typical sections change.
    - b. Examine transitions to determine how to get from one section to the other.
    - c. Determine areas that will be paved outside the typical sections such as intersections, widenings, turn lanes, sideroads or approaches.
  - G. Standard Details.
    - a. Find standard details that pertain to paving operations such as intersection layouts and traffic control operations for paving.
  - H. Standard Specifications.

- a. Review Section 400 of the Standard Specifications to refresh knowledge of requirements for the work.
  1. Section 401 covers the Description, Materials, Equipment, Construction Requirements, Method of Measurement, and Basis of Payment for Prime, Tack and Fog Seal.
  2. Sections 408, 409, and 410 cover Description, Materials, Equipment, Construction Requirements, Method of Measurement, and Basis of Payment for Bituminous Pavement. The proper section of the specification must be used for the HBP bid item.
  3. Review all specifications referenced within Section 400. Often another specification will be referenced within a specification to save duplication. The reference specification becomes part of the specification referencing it. Materials specifications pertaining to the work will be referenced.
- I. Proposal.
  - a. Look at Supplemental Specifications to be aware if any specification updates from the Standard Specifications have been made. Supplemental Specifications will govern over the Standard Specifications.
  - b. Examine the proposal to find Special Provisions regarding paving operations. Special Provisions are specific to the project and cover items and conditions that are not included in the Standard Specifications. Special Provisions govern over Plans, Supplemental Specifications and Standard Specifications.
- J. Construction Manual.
  - a. Consult the Section 400 of the Construction Manual to review the responsibilities of the inspector for the work being performed.
- K. Check the quantities of the bid items involved in the work. Plans are generally accurate but errors do happen and it is much better to find them early to avoid problems.
  - a. Organize calculations to identify where material is placed.
    1. Mainline
    2. Shoulders
    3. Turn Lanes
    4. Acceleration/Deceleration Lanes
    5. Sideroads
    6. Approaches
    7. Etc.
  - b. Determine a spread rate for mainline paving. Determine the volume of the pavement section in one station and multiply it by the density of the mix to determine the tons/sta that will be the target to meet plan quantity.
- L. Prepare any necessary field books to document the work.
- M. Organize the documentation required for materials acceptance.
  - a. Determine what materials are accepted by certification and which need sampling or testing.
  - b. Prepare a list of materials that are accepted by certification and a testing and sampling frequency for materials that require them.
2. Prior to start of paving.
  - A. Make sure mix design is approved.
  - B. Check stockpiles.
    - a. Identify type of material and location of stockpiles for mix production.
    - b. Check for contamination.

- c. Check for segregation.
  - d. Check that stockpiles are separated to prevent intermingling.
  - C. Bin Feeders.
    - a. Check that bins are separated to prevent intermingling of material from overloading the bins.
    - b. Make sure that the feeder gates are equipped with chains or some device to assure uniform feed.
    - c. Check calibration of feed bins.
    - d. Make sure a scalping screen is in place to prevent oversize material from entering the drum dryer.
  - D. Asphalt Plant. Refer to Section 152 of the Standard Specifications.
    - a. Check the slope of the drum to be sure it is within the manufacturer's recommendations.
    - b. See that the plant is equipped with temperature recording equipment that automatically and continually controls mix temperature.
    - c. Get calibration of the flow meter from the contractor.
    - d. Consult with the contractor to determine how samples will be taken during production.
    - e. Visit the control shack to become familiar with plant settings and operation.
    - f. Check scale certification.
    - g. Check the condition of storage tanks to verify there are no leaks and in good condition.
  - E. Equipment. Refer to Section 151 of the Standard Specifications.
    - a. Rollers must be of sufficient weight to meet specifications for applied force. Determine the method for checking the frequency and amplitude for vibratory rollers.
    - b. Check pneumatic roller tires to make sure they are inflated to the pressure range in the specifications. Tire pressure cannot vary more than 5 psi between any of the tires.
    - c. Check the condition of the distributor and become familiar with the operation and instrumentation necessary to monitor tack application.
    - d. Truck boxes should be checked to make sure they will not leak or have imperfections that may cause mix buildup. They should have tarps available to cover loads in the case of cold temperatures. Tarps should be capable of completely covering the box and free of holes and tears.
3. During paving.
- A. Plant Inspector.
    - a. Complete documentation of production and paving.
      - 1. Maintain up to date and accurate records including Inspection Reports, Mix Bitumen Cut Off Reports, mix temperature charts, delivered asphalt cement, plant settings, scale checks, and others.
      - 2. Visit the control shack to observe plant operation. Note mix temperature and plant settings to make sure things are running smoothly and plant settings have not changed without proper notification. Mix temperatures that are too high will break down the asphalt cement and reduce the life of the pavement.
    - b. Monitor the Contractor's operations at the plant site.
      - 1. Stockpiles should be checked to make sure the loader operator is not getting material from below the pile or segregating the pile as he removes material.
      - 2. Cold feed bins and conveyors should be examined to make sure material is being fed consistently in the correct proportions to the drum and is not segregating.

3. Trucks should be checked to make sure they have been cleaned out and diesel fuel is not being used as a release agent.
  4. Look at the surge bin or silo to make sure it is not leaking material.
  5. Observe trucks' being loaded to make sure segregation is not being caused.
  6. Check to see that tarps are available to cover loads in cool weather. Tarps should be free of rips and tears and should be large enough to completely cover the box.
  7. In general try to be aware of anything that may cause problems to the mix or on the road.
- c. Sample and test materials according to the Field Sampling and Testing Manual.
- B. Paving Inspector
- a. Distributor
    1. Check the amount of tack in the distributor.
    2. Check the temperature of the tack. If it is too cool it will not spray properly and if it is too hot it may begin to break in the distributor.
    3. Collect samples as required.
    4. Make sure the spray bar is heated.
    5. Know what the dilution rate is.
    6. Make sure the paving surface is clean. Tack will bond to dust and dirt on the roadway and could be picked up by trucks and the paver.
    7. Check that all nozzles are working properly.
    8. Check the bar height to make sure coverage of the paving surface is uniform.
    9. Make sure any vertical surfaces are tack coated.
    10. Record the beginning and ending stations of each tack shot.
    11. After tack is applied check the amount of tack left in the distributor to check and record the rate of application.
  - b. Rollers
    1. Make sure there are enough rollers to properly compact the pavement.
    2. Check to see that spray bar uniformly applies water to the roller drum.
    3. Check that vibrators are working properly and check the amplitude and frequency of the vibrators.
    4. Verify the manufacturers recommended contact pressure for pneumatic rollers. Check tire pressures and make sure all tires are inflated to the same pressure; there should be no more than 5 psi difference between any of the tires.
  - c. Paver.
    1. Check that grade control system is in place.
    2. Check that screed is preheated.
    3. Check that screed vibrators are working and in use while paving.
    4. Make sure the hopper has no mix from previous paving or other material that may contaminate the mix.
    5. Make sure there is no diesel fuel on the paver to clean hand tools.
    6. Check the augers to make sure they extend to within one foot of the width of the screed.
  - d. Paving.
    1. Make sure there are is enough trucks and material to allow continuous paving. Make sure traffic control is in place and everything is in order to safely control the work zone.
    2. Ideally the paver should never stop.

3. Check that there is adequate guidance for the paver operator to follow to produce straight tangents and smooth curves.
4. Collect haul tickets for each load of mix delivered.
5. Check the mix temperature. Cold mix or a cold screed will result in tearing the pavement surface.
6. Check that there are blocks provided for the screed to set on to allow material for rolldown at the joint.
7. Make sure handwork for the longitudinal joint is done promptly so compaction can occur before the material cools. Handwork should be kept to a minimum and excess material should be wasted not spread across the newly paved surface.
8. Check the transverse joint to make sure there is no bump after it is compacted.
9. If paving to match an adjacent lift make sure to allow enough material for 20-25% rolldown to achieve proper compaction at the longitudinal joint. If there is not enough material the joint may look smooth and sealed but not have adequate compaction to prevent early failures.
10. Check the pavement surface behind the paver. The surface should be uniform and free of segregation, streaks, drags or shadows. If any irregularities are found request the contractor to correct them.
11. Check the width of the pavement surface to verify the plan width will result.
12. Check thickness to verify that the desired thickness will be achieved after compaction.
13. Check the cross slope to determine if the proper camber is in the screed. A good starting point is one-half inch camber in the middle of the section. This allows for rolldown resulting in constant slope after compaction.
14. Check the sloughs to make sure they are at the proper slope and compacted.
15. Check the level of material in front of the screed. The level should be constant at the midpoint of the augers.
16. The hopper should be at least half full at all times.
17. Segregation will occur in the hopper as it is loaded. The wings should not be dumped during paving.
18. Where freshly placed pavement is not confined by curb and gutter, or an adjacent lift, begin compaction approximately six inches inside the pavement edge. Where the pavement is confined begin compaction overlapping the edges. Compact toward the middle of the section.
19. Check the speed of the pavers with the frequency and amplitude of the vibrators to get the best ride results. It is important to achieve 8-10 impacts per foot, less than that may produce a rippling effect in the pavement. Excessive impacts or amplitude may cause checking.
20. After a compaction sequence has been determined make sure the roller operators follow the pattern. If conditions change and a new compaction sequence is necessary determine a pattern that works and follow that.
21. Check the pavement temperature to make sure the compaction sequence is complete before the temperature drops below 185 degrees.
22. Check behind the rollers to verify plan width is being produced. Check that the slope across the section is uniform, if it is not adjust the camber in the screed to correct it.

23. Check the surface after compaction to make sure it is uniform, dense, and free from irregularities. There should be no segregation, streaks, tearing, steel roller marks, or checking.
24. Monitor the rate of application of the paving operation to make adjustments to the spread rate to keep on pace to meet plan quantity. Compare the results to the calculated spread rate. This should be done approximately every 500 tons. Make gradual changes to bring the rate in line. Spread rates are defined by the tons of mix placed divided by the number of stations between the beginning and ending stations. It is also important to track the cumulative spread rate. If the contractor is asked to increase thickness because the spread rate is low the idea is to get back on track to meet plan quantity. If the adjustment is too rapid or lasts too long another correction will be necessary. It is not good practice to constantly change thickness.
25. Prior to each days paving deduct the amount of mix previously placed from plan quantity and recalculate a new spread rate.