17.1 Asphalt Concrete Pavement - General

Asphalt concrete pavement consists of well-graded crushed coarse aggregate, fine aggregate and asphalt cement. When these components are properly mixed in an asphalt plant, a hot asphalt mixture is produced. This hot asphalt concrete, when properly placed and compacted on the bridge deck, provides a smooth riding surface.

- Asphalt concrete pavement normally consists of two 40mm lifts.
- An SS1 Emulsion Tack Coat must be applied to the surface being paved and the subsequent course, at a rate of 500 ml/m^2.
- Aggregates used must be sound, hard, durable and free of deleterious materials.
- Requirements of the ACP wearing surface should be as specified.

17.2 Environmental Constraints

Be aware of the environmental constraints. Note the following requirements:

- Before final acceptance of the ACP on a structure, the Contractor is required to remove all excess material, clean up and restore site to its original state.
- All over sprayed tack oil shall be satisfactory removed and cleaned.
- Asphalt materials should not be wasted into stream or adjacent embankments.

17.3 Safety

It is important to have a pre-job meeting with the paving contractor as well as the general contractor, where applicable to discuss all the safety issues.

Refer to the Alberta's Occupational Health and Safety Regulation, General Safety Requirements of specific safety requirements.

- Part 3 Health and Safety Plan
- Part 4 Hazard Assessment, Elimination and Control
- Part 5 Specifications and Certifications
- Part 11 Fire and Explosion Hazards
  - Section 136 Hot Work

- Part 15 Personal Protective Equipment
- Part 16 Powered Mobil Equipment
- Part 17 Radiation Protection
  - Apply to nuclear gauge usage to determine densities.
- Be aware of the public traffic.
- Issue “STOP WORK” order to paving contractor, if necessary.

17.4 Materials & Equipment

In order to achieve the desired product, the material and equipment for asphalt concrete pavement must meet the requirements of the Specifications. Following are major points pertaining to the material and equipment which should be noted.

17.4.1 Materials

It is important that the material and the approved mix design used are strictly controlled. The mix design must comply with the contract specifications and requires the approval of the Bridge Project Engineer.

- There are two types of mix designs, type 2 and type 4, depending on the road system where the bridge is located.

17.4.2 Equipment

The equipment and method used for this work should be adequate to produce and place the material as specified, and should be subject to the approval of the Bridge Project Engineer.

- The paving plant must be calibrated to produce the designated mix gradation and asphalt content, to ensure mix uniformity and consistency.
- Tanks for storage of asphalt should be equipped with suitable devices capable of heating the material effectively and able to control the temperature.
- Equipment for spreading should be a self-propelled mechanical paver, equipped with an automatic screed or strike-off assembly to provide the desired cross-section and profile.

- Compaction equipment should equal or exceed the placing rate of the spreading equipment and should be capable of obtaining the required density before the temperature of the mixture is too low.

17.5 Spreading and Compaction

During the spreading and the compaction operation, ensure that:

- Asphalt mix is not wasted over the sides or onto adjacent mats.
- Damage is not done to the waterproofing, curb, drains or medians.
- Damage is not done to bridgerails, guardrails, signs, and utility conduits.
- Each lift of asphalt has a nominal 40mm compacted thickness.
- All longitudinal and transverse joints are vertical butt joints and are staggered.
- Vibratory rollers are not used on the bridge deck.
- Compaction is continued until all roller marks are eliminated and the specified density is reached.
- The designed grade of the bridge is achieved ensuring that there are no local low spots on the deck.
- For short pavement transitions to tie in bridge decks and existing pavement surface, use a string line and straight edge to check the surface profile.

17.6 Checklist

17.6.1 Bridge Inspector's Responsibilities

- Review applicable Specifications and Drawings.
- Check survey and proposed grade-line for ACP as proposed by Contractor.
- Check to ensure the tack coat is sufficiently cured.
- Record the equipment and manpower of the Contractor.
- Take the asphalt temperatures and samples during paving operation.

- Check the longitudinal smoothness of the surface.
- Monitor the surface texture, e.g. segregation, roughness and porous areas.
- Check cross fall for drainage.
- Inspect the site cleanup.
- Calculate and record the ACP volume and tonnage placed.
- Inspect the longitudinal sawcut and excess removal of ACP where required.
- Initiate payment upon acceptable completion.

17.6.2 Bridge Project Engineer's Responsibilities

- Discuss with the Bridge Inspector and the Contractor regarding the paving methods and procedures.
- Discuss with the Bridge Inspector and the Contractor regarding the environmental and safety concerns.
- Discuss with the Bridge Inspector and the Contractor regarding the site cleanup and disposal of waste material.

SECTION 17

ASPALT CONCRETE PAVEMENT

ACP over Bridge Deck Waterproofing

17-1 Placing the first lift of asphalt concrete pavement on waterproofing protection board

17-2 Compaction equipment: The first passes were made with a steel drum "knock down" roller, followed by a wobbly and finished using a steel finishing roller

17-3 Placing centre mat on the final lift, the longitudinal paving joints were located outside the wheel path areas

ACP over Culvert

17-4 Applying tack coat

17-5 Spreading ACP with Bobcat along sawcut of existing roadway ACP

17-6 Compacting ACP with steel drum roller and wobbly