## AIR VOID REGRESSION MODIFIED MIX DESIGN

### General

There are many factors that contribute to a durable asphalt pavement, with asphalt cement content of asphalt mixes being one of them.  Alberta Transportation will focus on one asphalt mix property, asphalt cement content, and its influence on mix durability. Currently, asphalt concrete mix designs include a design air void content of 3.5% and Voids in Mineral Aggregate (VMA) and Voids Filled with Asphalt (VFA) as per the requirements in Table 3.50.3.2.

### Procedure

The Contractor is advised that for XX,XXX tonnes of top lift asphalt concrete mix on this project, that mix produced and placed will utilize the air void regression method for the determination of the regressed design asphalt content for mix with 3.0% design air voids. For the air void regression method, the asphalt mixture shall first be designed at a design asphalt content with 3.5% air voids, and the VMA and VFA meeting the requirements in Table 3.50.3.2, in order to establish the aggregate structure (i.e. Job Mix Formula for proportion of aggregate components). Then the regressed design asphalt content for production of the mixture is established at a design air void content of 3.0%. During production, the air voids shall not vary by more than 0.5% from the design air void content of 3.0%.

This reduction in the air void content will increase the amount of virgin asphalt cement required in the asphalt concrete mixture. Additional mix testing shall be required at the design asphalt content for the Air Void Regression Mix. Testing for Marshall Density, Stability, Flow, and Moisture Susceptibility shall be conducted at each of the two design asphalt contents. Film thickness shall be reported for each of the respective design asphalt contents.

The Air Void Regression Mix shall be constructed from kilometer xx.xxx to kilometer xx.xxx or as directed by the Consultant.

### Payment

The Air Void Regression Mix will be paid for using the separate bid item and unit price bid per tonne for “Asphalt Concrete Pavement – EPS (Air Void Regression Mix)”. Additional mix testing will be considered incidental and will not be paid for separately. All requirements of Specification 3.50 shall apply.

NOTES TO THE DESIGNER (NOT TO BE INSERTED INTO TENDER):

* SEPARATE BID ITEM FOR MIX WITH 3.0% DESIGN AIR VOID CONTENT (TONNES).
* FOR THIS PROJECT, A TRIAL SIDE BY SIDE SECTION WILL BE CONSTRUCTED AT THE DESIGN ASPHALT CONTENT FOR A CONVENTIONAL MIX WITH 3.5% DESIGN AIR VOID CONTENT FOR ONE MAT, AND FOR THE ADJACENT JOINING MAT AT A DESIGN ASPHALT CONTENT WITH A MIX WITH 3.0% DESIGN AIR VOID CONTENT. THIS SIDE BY SIDE SECTION APPLIES TO THE TOP LIFT ONLY.
* CONSULTANT TO DETERMINE LOCATION FOR TRIAL SECTION AND ESTIMATE QUANTITIES FOR 3.0% DESIGN AIR VOID CONTENT FOR BIDDING PURPOSES (APPROXIMATELY 10,000 TONNES). THE LOCATION SHOULD BE SELECTED TO ENSURE CONTINUOUS PRODUCTION (I.E. ALL 10,000 TONNES PRODUCED ON SUCCESSIVE DAYS RATHER THAN SWITCHING BETWEEN MIXES). ADJUST LOCATION AND WORDING IN SP AS REQUIRED.
* ALL REQUIREMENTS OF SPECIFICATION 3.50 REGARDING RECLAIMED ASPHALT PAVEMENT AND INCLUSION IN ACP ARE STILL APPLICABLE.
* INCLUDE A DEPARTMENT PIT OPTION.