SPECIFICATION AMENDMENTS and SUPPLEMENTAL SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION

(Supplemental to the Standard Specifications for Highway Construction, Edition 13, 2007, and the Specifications for Bridge Construction, 2007 manuals)

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1.1 PRIORITY LINE PAINTING FOR SITE OCCUPANCY

1.1.1 SITE OCCUPANCY

In accordance with Section 1.2.21.7, Completion of Line Painting and for the purposes of calculating Calendar Days for Site Occupancy, this project will be considered a Priority Line Painting project.

1.2 NON-PRIORITY LINE PAINTING FOR SITE OCCUPANCY

1.2.1 SITE OCCUPANCY

In accordance with Section 1.2.21.7, Completion of Line Painting and for the purposes of calculating Calendar Days for Site Occupancy, this project will be considered a Non-Priority Line Painting project.

1.3 CONSTRUCTION STAKING AND SURVEY - MAJORITY BY CONTRACTOR

1.3.1 FOR ASPHALT CONCRETE PAVEMENT- EPS OR COMBINED GRANULAR BASE COURSE, ASPHALT CONCRETE PAVEMENT- EPS PROJECTS OR OTHER APPLICABLE PROJECTS WHERE MEASUREMENT OF EXCAVATION QUANTITIES AS DETAILED IN SPECIFICATION 2.3, GRADING IS NOT REQUIRED

1.3.1.1 **The following is inserted before the first paragraph of Section 1.2.31, Stakes, Marks and Engineering Tests:**

The Consultant will indicate the beginning and end of the project and sufficient reference points and other information for horizontal and vertical control, to be used by the Contractor for his detailed layout. This information will include, if available, radii and lengths of curves, design superelevations, pavement widths, and centreline deflection points. The Contractor shall protect and shall not remove or destroy, or permit to be removed or destroyed, the stakes or marks set as reference points by the Consultant.

Subsequent to the initial reference points staking performed by the Consultant, the Contractor shall perform all layout, survey and construction staking necessary to meet specified requirements for any type of construction.

The Contractor's detailed survey layout for base course construction shall include a complete base-line displaying project stationing at 20 m intervals suitable for referencing test locations and for purposes of measurement for payment. For Asphalt Concrete Pavement overlay projects, the base-line shall display project stationing at 30 m intervals.

Layout for interim lane markings, including those for intersection treatments, shall be performed by the Contractor at his own cost.

The Contractor shall provide at his own cost, any survey activities as required and including, but not limited to, the following:

- Layout for interim lane markings, including those for intersection treatments
- Re-establishing the start and finish of “No Passing Zones”, or at new limits as directed by the Consultant
- String line or other markings for the alignment or grade control of construction equipment

1.4 CONSTRUCTION STAKING AND SURVEY - MAJORITY BY CONSULTANT

1.4.1 FOR PROJECTS WHERE MEASUREMENT OF EXCAVATION QUANTITIES AS DETAILED IN SPECIFICATION 2.3, GRADING IS NECESSARY

1.4.1.1 **The following is inserted before the first paragraph of Section 1.2.31, Stakes, Marks and Engineering Tests:**

Stakes or marks will be set by the Consultant to define the location, alignment, elevation, and grade required for the Work. The Contractor shall give the Consultant ample notice of the time and place where the stakes or marks will be needed. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes or marks placed on or about the Work by the Consultant.

The Contractor shall satisfy himself before commencing the Work as to the correctness and meaning of all stakes and marks.

Initially, the Consultant will provide complete baseline survey stakes at 20 m intervals which show offsets and metric station numbers or kilometre chainages that correspond to the control section. Additional baselines may be warranted depending on the complexity and terrain of the project. At least one baseline will note elevations above or below the shoulder grade. Work stakes will indicate backslope and/or sideslope cut and fills left and right of centerline.

Culvert locations will be staked by the Consultant noting the location of culvert ends, invert elevations, sizes and lengths.

Bridge fills will be staked by the Consultant in accordance with the applicable standard drawing(s).

The Contractor shall perform any further required survey to complete and prepare the roadway for final grade stakes.

When the Contractor determines that the roadway is sufficiently completed and prepared for final grading, he shall request that the Consultant provide final grade stakes. The Consultant will provide a maximum of two sets of final grade stakes.

Remaining survey activities for completing the base course and paving construction will be carried out by the Consultant.

Notwithstanding these provisions the Contractor shall perform at his own cost, any survey related activities as required and including, but not limited to, the following:

- Layout for interim lane markings, including those for intersection treatments
- Re-establishing the start and finish of “No Passing Zones”, or at new limits as directed by the Consultant
- String line or other markings for the alignment or grade control of construction equipment

1.5 AMENDMENT TO SPECIFICATION 1.2, GENERAL, RE: CONSTRUCTION STAKING AND SURVEY FOR BRIDGE STRUCTURES

1.5.1 THE FOLLOWING SUBSECTION IS ADDED TO SECTION 1.2.31, 'STAKES, MARKS AND ENGINEERING TESTS', OF SPECIFICATION 1.2 'GENERAL':

1.2.31.1 Construction Staking and Survey for Bridge Structures

The Consultant will provide accurate horizontal and vertical reference points for centreline of the structure. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes or marks established by the Consultant.

The Contractor shall provide and be responsible for all other stakes and marks, and shall be fully responsible for the alignment, elevation and dimensions of each and every component of the structure.

The Contractor shall keep complete survey records for review purposes and make these records available to the Consultant. The Contractor shall provide such assistance as the Consultant may require for review purposes.

In the event any component(s) of the structure is found to be incorrectly located or constructed the Contractor shall, at his own expense, immediately take any action necessary to correct or replace the particular component(s) of the work in question including the supply of any and all additional material required, and the Contractor shall be responsible for any delay incurred thereby.

1.6 AMENDMENT TO SPECIFICATION 1.2, GENERAL, RE: DIESEL FUEL COST ADJUSTMENT

1.6.1 THE FOLLOWING SUBSECTION 1.2.55 IS ADDED TO SPECIFICATION 1.2 'GENERAL':

1.2.55 DIESEL FUEL COST ADJUSTMENT

1.2.55.1 General

When specified in the Special Provisions, bidders are advised that the Department will make adjustments in monthly estimate payments due to the Contractor when the Consultant determines that the monthly Construction Index Price for diesel fuel has increased or decreased in excess of 15% of the Base Index Price.

The Base Price Index that applies to the Contract will be indicated in the Special Provisions. The Monthly Price index will be published by the Department on the Department's web site.

This specification will only apply to the following types of work:

- grading projects, where the commutative total design volume of common excavation, borrow excavation, and common or borrow excavation loaded to trucks exceeds 150,000 cubic metres and the quantities are measured by the Consultant;
- surfacing projects where the design quantity of asphalt concrete pavement exceeds 30,000 tonnes, or the design quantity of granular base course exceeds 35,000 tonnes;
- combination grading and surfacing projects where any of the above criteria are applicable.

On combination projects, when at least one work type exceeds the specified minimum design quantities, the monthly diesel fuel cost adjustments will be made to all specified types of work regardless of the actual minimum design quantity.

This specification will only apply to low sulphur diesel fuel, at the consumption rates specified hereafter. No allowance will be made to the specified consumption rates based on Contractor's choice of equipment, type of fuel, construction methodologies, efficiencies, or haul distances.

No diesel fuel price adjustments will be made to lump sum bid items.

1.2.55.2 Definitions

Monthly Price Index The Monthly Price Index (MPI) will be based on the average Edmonton and Calgary Rack Rates for low sulphur diesel as published by the Oil Price Information Service (OPIS). The MPI will be calculated as the average of the first three Mondays of each month. New MPI's will be established each month by the Department. In the event of a statutory holiday, the Rack Rate from the next working day will be used to determine the MPI.

Base Price Index The Base Price Index (BPI) is the baseline value of low sulphur diesel fuel that will be specified in the Special Provisions. Generally, the BPI for a Contract will be the most current MPI as determined by the Department prior to the initial tender advertising date.

Monthly Diesel Price Index The Monthly Diesel Price Index (MDPI) is the MPI published by the Department for the month in which Work is completed. To coincide with the time period used by the Department for preparing Progress Payments, the MDPI will be considered effective from the 26th day of the previous month to the 25th day of the current month.

1.2.55.3 Diesel Fuel Consumption Rates

For the purpose of diesel fuel cost adjustments, the following diesel fuel consumption rates will be used:

Category of Work	**In-Place Diesel Fuel Consumption Rate (CR) (1) (2) (3)**
Grading - (common excavation, borrow excavation, and common or borrow excavation loaded to trucks)	1.6 litres/m3
Crushing and Stockpiling - Designation 1 and Designation 2 aggregates	0.5 litres/tonne
Asphalt Concrete Pavement - (all mix types) In Place, excluding crushing	2.8 litres/tonne
Granular Base Course - (Designation 2) In Place, excluding crushing	2.4 litres/tonne

Note 1: The specified consumption rates include overhaul and/or truck haul. No adjustment to the consumption rate will be made based on the actual haul distance;

Note 2: No escalation / de-escalation adjustments will be considered for burner fuel;

Note 3: The consumption rate associated with haul of processed aggregate is included in the specified consumption rates for asphalt concrete pavement and granular base course. If the Contractor elects to interim haul designation 1 and designation 2 materials, there will be no adjustment to the specified consumption rates as compensation for the separate interim hauling operation;

Note 4: If the Contractor does not interim process and stockpile designation 1 and designation 2 aggregates, the consultant will add the crushing and stockpiling consumption rate to the specified consumption rates for asphalt concrete pavement and granular base course.

1.2.55.4 Calculation of Diesel Fuel Cost Adjustment

The Consultant will calculate diesel fuel cost adjustments only during months in which Work is actually performed.

The Consultant will compute the ratio of Monthly Diesel Price Index / Base Fuel Index each month. If the ratio falls between 0.85 and 1.15, inclusive, no fuel cost adjustment will be made for that month. If the ratio is less than 0.85 a credit to the Department will be computed. If the ratio is greater than 1.15 additional payment to the Contractor will be computed. Diesel Fuel Cost Adjustments will be computed as follows:

1.2.55.4.1 Diesel Fuel Price Decrease

When the Monthly Diesel Price Index is less than 85% of the Base Price Index, a diesel fuel de-escalation assessment will be calculated. This assessment will be deducted from any monies due the Contractor on the Progress Payment.

P.R. = (0.85 - (MDPI / BPI)) x (Q) x (BPI) x (CR)

where:

P.R. = Price Rebate

MDPI = Monthly Diesel Price Index, as determined by the Department for the month

BPI = Base Price Index, as determined by the Department at the time of tender closing

Q = the quantity of eligible category of work, as determined by the Consultant and as reported on the monthly progress estimate

CR = the diesel fuel consumption rate for the eligible category of work

1.2.55.4.2 Diesel Fuel Price Increase

When the Monthly Diesel Price Index is more than 115% of the Base Price Index, a diesel fuel escalation assessment will be calculated. This assessment will be added to any monies due the Contractor on the Progress Payment.

P.I. = ((MDPI / BPI) - 1.15) x (Q) x (BPI) x (CR)

where:

P.I. = Price Increase

MDPI = Monthly Diesel Price Index, as determined by the Department for the month

BPI = Base Price Index, as determined by the Department at the time of tender closing

Q = the quantity of eligible category of work, as determined by the Consultant and as reported on the monthly progress estimate

CR = the diesel fuel consumption rate for the eligible category of work

1.2.55.5 Contractor's Option to Participate with Diesel Fuel Cost Adjustments

For any eligible project, the Contractor shall have the option to participate or opt-out of the Department's diesel fuel cost adjustment process. The Contractor's decision to participate or opt-out will apply to the entire Work and no consideration will be given to diesel fuel cost adjustments for individual components of the Work.

If the Contractor wishes to opt-out of the Department's diesel fuel cost adjustment process, the Contractor shall state their intent in writing to the Department prior to execution of the Contract.

If a bidder does not state their intent in writing to the Department prior to execution of the Contract, the Department will deem that the Contractor's intent was to participate in the diesel fuel cost adjustment process and no further changes will be considered.

The Contractor will not be permitted to either opt-in or opt-out of the diesel fuel cost adjustment process after the execution of the Contract.

1.2.55.6 Conclusion of Diesel Fuel Cost Adjustment

The calculation of Price Rebates and Price Increases on diesel fuel consumption will only be considered for Work acceptably completed prior to the specified or adjusted Contract completion date.

For any Work completed after the specified or adjusted Contract completion date, the Department will process payments without applying any diesel fuel cost adjustments.

1.2.55.7 Final Payments

If the Work is completed prior to the specified or adjusted Contract completion date, upon completion of the Work, any difference between the estimated quantities and the final quantities will be determined by the Consultant. An average Monthly Diesel Price Index will be calculated by averaging the Monthly Diesel Price Indexes for all months in which Work was acceptably completed. This average Monthly Diesel Price Index will be applied to the quantity differences in accordance with Section 1.2.55.4.

If the Work is not completed prior to the specified or adjusted Contract completion date, diesel fuel price adjustments will not be applied to any difference between estimated and final quantities.

1.7 SUPPLY OF PLASTIC GUARDRAIL POSTS - CONTRACTOR'S OPTION

The Contractor has the option of supplying plastic guardrail posts in place of wooden posts except for the following locations:

- At any installation on Highway 2 between Edmonton and Calgary,
- On strong post system installations at bridge abutments or
- At any other installation specifically prohibited by the Consultant

1.7.1 IN SPECIFICATION 5.25, ADD A NEW SUB-SECTION AS FOLLOWS:

5.25.3.4 Plastic Guardrail Posts

Plastic Guardrail Posts shall be supplied in accordance with the Alberta Transportation Recognized Products List as shown on the Department's web pages and the following:

Plastic posts shall be stamped at the top of the post on a surface not used for rail attachment with:

- the identifying product number or code, and
- the year of manufacture.

These markings shall be legible throughout the normal service life of the post. The Contractor shall supply the Consultant with certification from the supplier that the plastic posts conform to the specifications.

1.7.2 IN SPECIFICATION 2.19, GUARDRAIL AND GUIDE POSTS, ADD THE FOLLOWING NEW SECTION:

2.19.4.6 Supplying and Installing Plastic Guardrail Posts

If the Contractor elects to install plastic posts instead of wooden posts, the Department will make a premium payment of $ 2.50 for each plastic guardrail post supplied and installed. This premium will be paid in addition to the unit price bid for the applicable supply and install guardrail bid item.

1.8 AMENDMENT TO SPECIFICATIONS 2.3 GRADING, 3.1, SUBGRADE PREPARATION AND ALL BASE COURSE SPECIFICATIONS REGARDING TOLERANCE FOR SURFACE FINISH

1.8.1 GENERAL

The finished surfaces constructed under this contract are subject to tolerances for elevation, slope and width. These tolerances shall apply to the following:

(i) the finished subgrade surface;
(ii) the finished surface of Granular Base Course, Cement Stabilized Base Course and Asphalt Stabilized Base Course; and
(iii) embankment sideslope and ditches.

All surfaces shall be built true to grade, cross-section and alignment with consistent, uniformly contoured surfaces. Furthermore, the finished roadway grade, alignment and widths shall tie neatly into fixed control points such as bridge abutments, railway crossings, grade intersections, etc. to the satisfaction of the Consultant.

1.8.2 TOLERANCES FOR ALL TYPES OF GRADING AND BASE COURSE WORK

The Contractor shall produce all finished surfaces to achieve or exceed the grade, slope and width tolerance limits as follows:

1.8.2.1 **Surface Tolerance at Base Line Stations**

The deviation of the finished surface from the corresponding design elevation will be determined by the Consultant at each station. The maximum allowable deviation from the design elevation at any point will be ± 30 mm for subgrade surfaces and ± 20 mm for base course surfaces.

Furthermore, the maximum difference in deviation between consecutive stations at the same offset, shall not be more than 30 mm for subgrade surfaces and 20 mm for any type of base course surface.

1.8.2.2 **Slope Tolerance Limits**

The Consultant will determine the roadway slope using the elevations at centerline and edge of shoulder at any location on the finished surface that he determines necessary. These measured slopes shall be considered Slope Reference Lines.

For projects consisting of combined Grading/Granular Base Course Work or Base Course Work only, the Slope Reference Line at any location on a finished surface shall not deviate from the design slope by more than 0.25%.

For projects consisting of Grading Work only, the Slope Reference Line at any location on a finished surface shall not deviate from the design slope by more than 0.5%.

Furthermore, for all types of Work, no point on the surface shall deviate in elevation by more than 15 mm from the Slope Reference Line as determined.

1.8.2.3 **Surface Width Tolerance Limits**

The finished surface, as measured from shoulder edge to shoulder edge, shall not be wider by more than 0.1 m or narrower by more than 0.05 m from the design width as determined by the Consultant.

1.8.2.4 **Road Side Slope Tolerance Limits**

At any location, no part of any finished side slope shall deviate from the design side slope by more than ±0.2 m/m.

1.8.2.5 **Road Ditch Width Tolerance Limits**

At any location, the ditch width shall not deviate by more than 0.2 m from the design or as approved by the Consultant.

The tolerance limits for Road Side Slope and Road Ditch Width only apply when the Contract calls for Grading Work.

1.8.3 MEASUREMENT

The Consultant will take as many measurements as he thinks necessary to establish compliance with this specification and may vary the general interval, particularly where the finished surface is evidently not plane between stations or across the travel lanes. The Department will make no charge for initial measurements. Where compliance with surface tolerance requirements is not initially achieved, reworking will be required. After the surfaces are reworked, the Consultant will determine if re-measuring to confirm compliance is required. If the Consultant performs re-measure and the surfaces are not in compliance, the Contractor will be charged an amount of $500.00 per occurrence and further reworking shall be required. An "occurrence" will be considered a day or portion of a day in which re-measuring to verify compliance is performed. If the Consultant performs re-measure and the reworked surfaces are in compliance, no charge will be made for the re-measure.

For Granular Base Course projects, no payment will be made for any granular material placed outside the specified tolerance limits for Surface Width and Road Side Slope, with the exception that for Grade Widening projects where there is a need to initially construct the granular base course to a width that will accommodate construction equipment, the Consultant and Contractor shall agree on the allowable tolerances for construction and payment purposes.

In any cases where granular base course material is placed outside the specified or allowable tolerances, as the case may be, such quantity will be determined by the Consultant.

1.9 HOT IN-PLACE RECYCLED ASPHALT CONCRETE PAVEMENT - EPS

1.9.1 GENERAL

This specification is to be used only for pavement to be processed using the Hot In-Place Recycling (HIR) technology and serves as a supplement to Specification 3.50, Asphalt Concrete Pavement - End Product Specification (EPS). Specification changes have been made recognizing the unique characteristics of mixes processed using this technology. In case of conflict between this special provision and Specification 3.50, this special provision shall govern. References to Asphalt Concrete Pavement in Specification 3.50, except where noted in this special provision, shall also apply to Hot In-Place Recycling.

1.9.2 HOT IN-PLACE RECYCLING (HIR)

Hot In-Place Recycling shall consist of heating the existing asphalt concrete pavement; milling the heated pavement; mixing the milled material; adding as directed, admix, or rejuvenating agent and spreading and compacting the resultant mixture, all in one continuous operation, to the depths, lines, grades and dimensions shown on the plans or as designated by the Consultant.

1.9.3 CHANGES TO SPECIFICATION 3.50

1.9.3.1 **In Section 3.50.1.2 Definitions make the following changes:**

1.9.3.1.1 Remove definition 3.50.1.2.1 Acceptance Limits (i) Density and Actual Asphalt Content and replace with:

(i) Density, Marshall Air Voids and Recovered Asphalt Penetration

Acceptance Limit for Density, Marshall Air Voids and Recovered Asphalt Penetration is the limiting value of the Sample Mean beyond which a Lot is accepted at full, increased or reduced payment as shown in Tables 6, 7 and 8.

1.9.3.1.2 In Section 3.50.1.2.1 Acceptance Limits remove (iii) Gradation.

1.9.3.1.3 Replace Section 3.50.1.2.5 Lot with the following:

A Lot is a portion of the Work being considered for acceptance and is generally considered to represent 3 lane·kilometres of production, but can vary in length, according to project specific requirements, within the limits of 1 lane·kilometre to 4 lane·kilometres. The actual Lot size is to be chosen by the Consultant.

A change in any one of the following may require a new Lot designation:

(a) Mix design
(b) Pavement Density Requirement

1.9.3.1.4 In Section 3.50.1.2.6 Rejection Limit remove (i) Density and Asphalt Content and replace with:

(i) Density, Marshall Air Voids and Asphalt Penetration - Rejection Limit for density, Marshall air voids and asphalt penetration is the limiting value of the Sample Mean beyond which a Lot is rejected and not paid for as shown in Tables 6, 7 and 8.

1.9.3.1.5 In Section 3.50.1.2.6 Rejection Limit remove (iii) Gradation.

1.9.3.1.6 Add the following to Section 3.50.1.2 Definitions:

3.50.1.2.14 Admix

Aggregate, with sufficient asphalt cement added to produce a uniform completely coated mixture that is added during the recycling process to improve the engineering characteristics of the HIR mix.

3.50.1.2.15 Segment

For the purposes of acceptance sampling and testing for Pavement Density, a Lot is divided into 5 or more segments of approximately equal area.

1.9.3.2 **Remove the contents of Section 3.50.2.1 Asphalt and replace with:**

The Contractor shall supply asphalt material for pre-coating of the admix in accordance with Specification 5.7, Supply of Asphalt.

1.9.3.3 **Remove the first sentence of Section 3.50.2.2 Aggregate and replace with:**

The Contractor shall supply aggregate in accordance with Specification 3.2 Aggregate Production and Stockpiling according to the Admix Aggregate Requirements outlined in Table 2 HIR Mix Types and Characteristics

1.9.3.4 **Add the following Section to 3.50.2 MATERIALS**

3.50.2.5 Rejuvenating Agent

An asphalt rejuvenating agent or asphalt shall be provided and added by the Contractor, when required, to result in the recycled asphalt cement meeting the specified penetration criteria.

Only asphalt rejuvenating agents listed within the Department's Recognized Products List shall be used by the Contractor.

Any asphalt rejuvenating agent used by the Contractor shall meet the applicable manufacturer's specifications.

1.9.3.5 **In Section 3.50.3 ASPHALT MIX DESIGN AND JOB MIX FORMULA**

1.9.3.5.1 Replace Table 3.50.3.2 with Table 1

Table 1 HIR Mix Types and Characteristics

Mix Type (Note 4)	Recovered Asphalt Penetration (dmm) (Note 1)	Admix Aggregate Requirements		Air Voids (%) (Note 3) refer to Figure 1 for Box Boundaries	Marshall Stability	
		Plasticity Index (PI)	Maximum Passing 80 μm Sieve (%) (Note 2)		Minimum (N)	Minimum % Retained
HR1	65 to 135	NP	10	A, B & C	8 000	70
HR1C	95 to 135	NP	10	B & C	8 000	70
HR2	65 to 160	NP	10	A, B, C & D	6 000	70
HR2C	115 to 160	NP	10	C & D	6 000	70

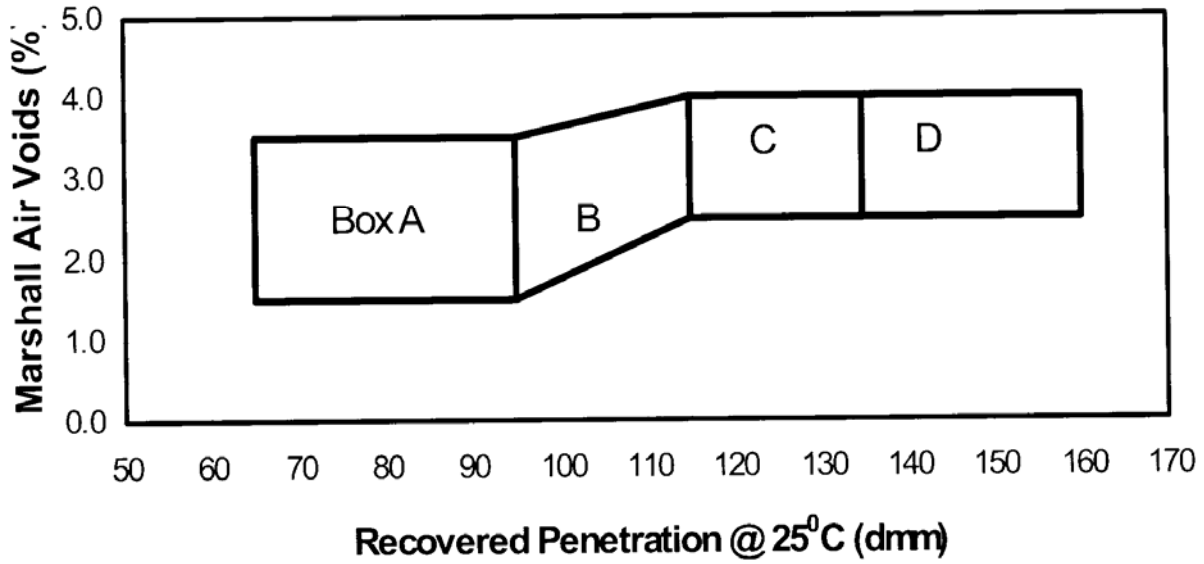
Note 1 Recovered Asphalt Penetration requirements are for the combined asphalt including any rejuvenating agent or virgin asphalt.

Note 2 If the admix is a manufactured fines aggregate the maximum limit for percent passing the 80 µm sieve shall be 13%.

Note 3 Air voids shall be determined on the basis of maximum specific gravities at each asphalt content. Marshall briquettes shall be formed using 75 blows per face at a compaction temperature of 130°C.

Note 4 HIR Mix Type shall be as listed in the special provisions.

Figure 1 HIR Design Air Voids and Design Recovered Asphalt Penetration



1.9.3.6 **In Section 3.50.3.3 Verification of Mix Design make the following changes:**

1.9.3.6.1 Remove items (i), (ii), (iii), (iv), (v) and (vi) and replace with the following:

(i) The aggregate type and amount of any admix added by weight of total mix.

(ii) The aggregate gradation of any admix used and the other aggregate characteristics for admix as specified in Table 2 HIR Mix Types and Characteristics.

(iii) The type of asphalt cement grade and percent asphalt content added to the admix.

(iv) Other aggregate characteristics of the admixture as specified in Table 1 HIR Mix Types and Characteristics.

(v) Test data of the existing pavement used in the preparation of the mix design, including sampling locations, aggregate gradations, asphalt contents and penetrations @25°C (100 g, 5 s) of the existing asphalt cement.

(vi) Identification of type and quantities of any asphalt rejuvenating agent required.

(vii) All Marshall mix design characteristics as specified in Table 1 HIR Mix Types and Characteristics including the aggregate gradation of the recycled mix including admix where applicable.

1.9.3.6.2 Add the following to the end of the fourth paragraph:

For HIR mix the Consultant may, at any time, require the Contractor to provide representative samples of each of the aggregate components or existing pavement material for verification purposes. A sufficient quantity of each component shall be provided to result in a 10 kg sample of recycled material and no individual component shall be less than 5 kg.

1.9.3.6.3 Add the following paragraph:

The addition rate of admix and rejuvenating agent for the approved mix design will then be the Job Mix Formula for the production of HIR mix.

1.9.3.7 **Remove the first three paragraphs of Section 3.50.3.4 Variation from Approved Job Mix Formula and add the following:**

After the Consultant has accepted the HIR mix design, the combined aggregate gradation in the accepted design shall become the Design Combined Aggregate Gradation. The difference between the Lot Average Gradation and the Design Combined Aggregate Gradation shall not exceed the amounts shown in Table 2. Deviations outside the permissible limits shown in Table 2 will be evaluated by the Consultant to determine if a new mix design is required.

Table 2 HIR GRADATION VARIATION

SIEVE DESIGNATION	MAXIMUM PERMISSIBLE VARIATION PERCENT BY WEIGHT PASSING
5000	±6
1250	±5
630	±4
315	±3.5
160	±3.0
80	±2.5

1.9.3.8 **In Table 3.50.4.2 Test Methods make the following changes:**

1.9.3.8.1 Add "ASTM D3203" under test method for Test Description No. 9. Voids Calculation, Asphalt Concrete Specimens.

1.9.3.8.2 Add the following:

18	Asphalt Recovery from Solution by the Abson Method	ASTM D1856
19	Standard Penetration Test for Asphalt	ASTM D5
20	Theoretical Maximum Specific Gravity, Asphalt Mix	ASTM D2041

1.9.3.9 **Add the following to Section 3.50.4.3 Quality Control Testing**

The quality control testing requirements for HIR shall be as outlined in Table 3 QUALITY CONTROL TESTING REQUIREMENTS - HOT IN-PLACE RECYCLING.

Table 3
Quality Control Testing Requirements - Hot In-place Recycling

Test	Standard	Minimum Frequency
AGGREGATE PRODUCTION		See Specification 3.2
EQUIPMENT CALIBRATION	Determined by Contractor	Once per project or as required
SAMPLES 1. Admix 2. HIR mix 3. QA Cores for Pavement Density - Stratified Random Test Sites Chosen by the Consultant	 ATT-38 ATT-38 ATT-56, ATT-5	 (1) One per lane·km Five per Lot
EQUIPMENT INSPECTION	Determined by Contractor (2)	Four per day

	Test	Standard	Minimum Frequency
TESTING WITH NO SPECIFIED MINIMUM FREQUENCIES			
1	Asphalt Content of Admix and HIR mix	AASHTO T-164, T287 or ATT-12 or ATT-74	(1)
2	Moisture Content of Admix and HIR mix	ATT-15	(1)
3.	Field Formed Marshall Briquettes	ATT-13	(1)
4.	Abson Extraction of HIR mix	ASTM D1856	(1)
5.	Standard Penetration of Recovered Asphalt	ASTM D5	(1)
TESTING WITH SPECIFIED MINIMUM FREQUENCIES			
1	Aggregate Extraction or Ignition Sieve Analysis of HIR mix.	ATT-26	One per HIR mix sample
OTHER RELATED TESTS			
1.	Density Immersion Method, Saturated Surface Dry	ATT-7	(1)
2.	Temperatures	ATT-30	(1)
3	Extraction Sieve Analysis of Admix	ATT-26	(1)
4.	Void Calculations, Cores or Formed Specimens	ASTM 3203 (3)	(1)
5.	Coring or Nuclear Density	ATT-5 or ATT-11 (3)	(1)
6	Percent Compaction, Asphalt Concrete Pavement	ATT-67 or ATT-11	(1)
7	Random Test Site Locations	ATT-56	As applicable
8.	Correction Factors, Nuclear Moisture-Density Measurement	ATT-48	(1)
9.	Thickness Measurement of Un-compacted Mat		Minimum of one per hour of production
10	Theoretical Maximum Specific Gravity of Bituminous Mixes	ASTM D2041	(1)

Notes:
(1) Minimum Frequency not specified.
(2) To include checks on the addition rate of any asphalt rejuvenating agent and/or admix used.
(3) Percent compaction and core air voids based upon the Lot Mean Maximum Specific Gravity (Gmm).
Air voids on Marshall formed specimens to be based upon corresponding individual Gmm tests.

1.9.3.10 **Make the following changes to Section 3.50.4.4 Acceptance Sampling and Testing**

1.9.3.10.1 Replace the third paragraph of Section 3.50.4.4.1 with the following:

The Contractor shall provide to the Consultant all quality assurance density cores within 24 hours of receiving the stratified random sample locations. Prior to obtaining the cores, the Consultant may provide the Contractor with new or different random sample locations. The Consultant may have the Contractor obtain quality assurance cores at any time throughout the project for any Lot. All cores provided to the Consultant shall be in their original condition. Core preparation or sawing shall be done by the Consultant.

All costs associated with pavement coring for quality control and quality assurance testing shall be the responsibility of the Contractor.

1.9.3.10.2 Add the following to Section 3.50.4.4.1 General

If the testing equipment malfunction, improper testing procedures or calculations were on the part of the Consultant, the Contractor shall be reimbursed $50 per location for obtaining cores.

1.9.3.10.3 In Section 3.50.4.4.2.1 Pavement Sampling for Density, Asphalt Content and Gradation change the title to Pavement Sampling for Density.

1.9.3.10.4 Delete the contents of 3.50.4.4.2.3 Asphalt Mix Sampling and replace with the following:

Sampling of the recycled asphalt mixture for the formation of Marshall briquettes, mix extraction, determination of the maximum specific gravity, air voids determination and penetration testing of the recovered asphalt will be done by the Consultant behind the paver as outlined in ATT-37 with the following changes:

For each mix sampling instance, an additional two split samples, of 5 000 g each, will be collected. One of the two split samples will be identified for recovered asphalt penetration testing while the remaining sample will be identified for possible appeal testing of the Lot maximum specific gravity that is used for the determination of the Lot average Marshall Air Voids.

1.9.3.10.5 Add the following as Section 3.50.4.4.2.5 Recovered Asphalt Penetration

From the group of split samples identified for penetration testing for each lot, one of the 5 000 g samples will be selected for penetration testing of the recovered asphalt. The remaining split samples identified for penetration testing, are to be saved for possible follow-up testing as outlined in the new Section 3.50.4.8.8, Recovered Asphalt Penetration as shown in this specification amendment.

The Consultant may not test every Lot for Recovered Asphalt Penetration if he is satisfied that the requirements for Recovered Asphalt Penetration are being achieved.

1.9.3.11 **Delete all of Section 3.50.4.6 Aggregate Gradation Requirements.**

1.9.3.12 **In Section 3.50.4.8 Appeal of Acceptance Test Results and Appeal Testing delete all reference to Asphalt Content and Gradation.**

1.9.3.13 **Rename Section 3.50.4.8.4 to be "Payment of Appeal Testing Costs for Smoothness and Marshall Air Voids" and add the following:**

Theoretical maximum specific gravity tests for determination of Lot Average Marshall Air Voids: $100 per test.

1.9.3.14 **Add the following as Section 3.50.4.8.7 Marshall Air Voids**

The Contractor may appeal the theoretical maximum specific gravity test results, used to determine the Marshall air voids, of any rejected or penalized lot only once. The appeal shall be for all the theoretical maximum specific gravity tests within the Lot, and there will be no appeal allowed for single tests within a Lot.

No appeal will be allowed for Marshall bulk specific gravity test results.

The following procedure will apply for an appeal:

(i) The Contractor shall serve notice of the appeal to the Consultant, in writing, within 48 hours of receipt of the QA test results.

(ii) The appeal testing will consist of retesting for theoretical maximum specific gravity the split mix samples obtained for the appealed lot.

(iii) The number of split samples shall correspond to the original number of quality assurance mix samples taken in the Lot.

(iv) The high and low test results from the old Lot will be rejected and all the remaining test results will be added to the results of the new tests. A new mean for the test results will be determined and used for calculating the new average Marshall air voids to be used for acceptance and unit price adjustment.

The new mean, thus determined, in all cases, will be binding on the Contractor and the Department.

1.9.3.15 **Add the following as Section 3.50.4.8.8, Recovered Asphalt Penetration**

If the original test result for the penetration of the abson recovered asphalt falls within the range for rejection or penalty, the Consultant will arrange to have the remaining penetration split samples from that Lot tested. The number of split samples shall correspond to the original number of quality assurance mix samples taken in the Lot, less one for the original penetration test.

A new mean including the original test result and subsequent test results will be used for calculating the new average penetration of recovered asphalt for acceptance and unit price adjustment.

The new mean, thus determined, in all cases, will be binding on the Contractor and the Department.

1.9.3.16 **Add the following to Section 3.50.5 CONSTRUCTION**

3.50.5.10 Hot In-Place Recycling

Equipment used for hot in-place recycling shall be specifically designed to heat and mill the existing pavement to a minimum depth of 50 mm, thoroughly mix the recycled material and uniformity spread the recycled material. Milling heads are to be used for removing the existing pavement material as opposed to the sole use of scarifier tines which shall not be allowed.

The recycling equipment shall be designed to heat the recycled material to within specified limits without scorching or localized over-heating of any of the recycled material.

The hot in-place recycling equipment shall be equipped with a mixing system capable of continued and consistent mixing. The mixing system must have sufficient capacity to thoroughly mix the recycled material including any admixture and/or rejuvenating agent into a homogeneous mass.

The hot in-place recycling equipment shall be equipped with a vibratory heated screed and strike-off device capable of distributing and placing the recycled mix to the depths and dimensions shown on the typical plans and sections. The temperature of recycled material behind the paver screed shall be greater than 110°C. At no time shall the recycled material be heated over an average material temperature of 150°C in order to avoid excessive oxidation and hardening of the recycled asphalt cement.

The recycler unit shall be equipped to enable admix to be metered into the material being processed at a controlled and uniform rate and in such a manner to ensure that all materials are uniformly mixed with the recycled material. All HIR material, with or without admix, shall be uniformly mixed and coated.

The recycler unit shall be equipped to enable a rejuvenating agent to be uniformly added to the heated and milled mixture. Such equipment shall provide for the following:

(i) Positive feed and shut-off, interlocked to the movement and processing rate of the recycler.

(ii) Control of the quantity to ±0.05 ℓ/m2 from the approved target application rate.

(iii) Measurement of the total volume used by means of a calibrated metering device capable of recording accumulated litres to an accuracy of ±2%.

(iv) Heating and maintaining the temperature to within ±5°C of the temperature recommended by the manufacturer of the rejuvenating agent used.

HIR equipment shall be operated in accordance with the manufacturer's recommendations and shall be calibrated prior to commencing production. The Contractor shall provide the Consultant with calibration data indicating that the hot in-place recycling equipment has been calibrated to produce a uniform mixture in accordance with the Job Mix Formula.

The HIR production has the potential to produce unlawful air emissions unless carried out carefully using the appropriate equipment. In this regard, the Contractor's attention is directed specifically to Section 1.2.51 of the specifications. The Contractor shall have no claim to any

exemption from the requirements of Alberta Environment, or to any payment for extra costs resulting from the need to comply with their requirements, by virtue of this Contract or for any other reason.

1.9.3.17 **Add the following to Section 3.50.5.2.1 General**

Pavement surfaces to be recycled shall be cleaned of all dirt, dust, and other objectionable matter. The existing asphalt surface shall be heated a minimum of 0.10 m wider on each side than the width being processed. The processing width shall be as shown on the plans or as determined by the Consultant.

For hot in-place processed material, the requirements for prime coat or tack coat do not apply.

1.9.3.18 **Add the following to Section 3.50.5.2.3 Transverse Pavement Joints:**

At locations where hot in-place recycling is used the preceding joint requirements do not apply, however the Contractor shall ensure that the transition between the treated and untreated surfaces is smooth with no irregularities.

1.9.3.19 **Make the following changes to Section 3.50.6.2.1 Acceptance at Full or Increased Payment:**

1.9.3.19.1 delete sections (ii) and (v)

1.9.3.19.2 add the following

(vi) the average Marshall Air Voids of the mix is within the applicable limits specified in Table 1 HIR Mix Type and Characteristics.

(vii) the average penetration of the recovered asphalt is within the limits shown within Table 6 indicating no price adjustment for the applicable HIR mix type.

1.9.3.20 **In the first paragraph of Section 3.50.6.3 End Product Rejection replace the words "actual asphalt content or aggregate gradation" with "Marshall air voids or penetration of recovered asphalt".**

1.9.3.21 **In Section 3.50.7 Measurement and Payment, replace Section 3.50.7.1 with the following:**

3.50.7.1 HIR Pavement

Accepted HIR Pavement will be measured in square metres as determined by the actual treatment width and length measured according to the established baseline survey and will be paid for at the unit price bid per square metre for "HIR Pavement - EPS" subject to the unit price adjustments and assessments hereinafter specified. This payment will be full compensation for all labour, equipment, tools and incidentals necessary to complete the work in accordance with the Special Provisions in the Contract and shall include heating, milling, mixing, laying and compacting the recycled asphalt mixture; supplying and adding admix; aggregate supply and processing; supplying and adding rejuvenating agent or virgin asphalt; interim lane markings; quality control testing including sampling of quality assurance cores and traffic accommodation.

1.9.3.22 **In Section 3.50.7.1.1 Pay For Acceptable Work make the following changes:**

1.9.3.22.1 Delete the first six paragraphs and replace with the following:

The following end product properties of "HIR Pavement - EPS" will be measured for acceptance in accordance with Section 3.50.4.4 Acceptance Sampling and Testing.

(i) Pavement Density
(ii) Marshall Air Voids
(ii) Penetration of Recovered Asphalt
(iv) Smoothness (top lift only)
(v) Segregation (top lift only)

For the Pavement Density, Marshall Air Voids and Penetration of Recovered Asphalt to be acceptable, they must be within the limits shown in Tables 4, 5 and 6.

For each Lot, the unit price adjustments for Pavement Density, Marshall Air Voids and Penetration of Recovered Asphalt will be the amounts shown in Tables 4, 5 and 6.

The unit price applicable to each Lot quantity of "HIR Pavement, - EPS" will be calculated as follows:

Lot Unit Price per Square Metre	=	Contract Unit Price per Square Metre	+	the sum of the unit price adjustment for PAd + PAr + PAv

where:

PAd = Unit Price Adjustment for Pavement Density (bonus or penalty)
PAr = Unit Price Adjustment for Penetration of Recovered Asphalt (penalty only)
PAv = Unit Price Adjustment for Marshall Air Voids (penalty only)

If the mean Pavement Density or the mean Marshall Air Voids or the mean Penetration of Recovered Asphalt is outside the acceptance limit, the Lot is rejected, and no payment will be made for the quantity of HIR in that Lot, until the defect has been remedied.

1.9.3.22.2 In the second last paragraph of 3.50.7.1.1 Pay For Acceptable Work delete the term "PAa and PAg" and replace with the terms "PAr and PAv".

1.9.3.23 **In section (ii) of 3.50.7.1.3 Payment For Work That had Been Rejected, But Was Made Acceptable delete the words "Asphalt Content and Gradation" and replace with "Marshall Air Voids and Penetration of Recovered Asphalt".**

Table 4
Unit Price Adjustment for Density - Hot In-Place Recycled Asphalt Concrete Pavement

% Lot Mean Maximum Specific Gravity	HIR Unit Price Adjustment	
	HIR ($/m2)	
Lot Average	Design Lift Thickness	
	40 mm	50 mm
≥ 95.5	0.048	0.06
95.4	0.043	0.054
95.3	0.039	0.048
95.2	0.034	0.042
95.1	0.029	0.036
95.0	0.024	0.03
94.9	0.019	0.024
94.8	0.015	0.018
94.7	0.009	0.012
94.6	0.005	0.006
94.5	0	0
94.4	-0.009	-0.012
94.3	-0.019	-0.024
94.2	-0.029	-0.036
94.1	-0.039	-0.048
94.0	-0.048	-0.06
93.9	-0.057	-0.072
93.8	-0.066	-0.084
93.7	-0.077	-0.096
93.6	-0.086	-0.108
93.5	-0.096	-0.12
93.4	-0.106	-0.132
93.3	-0.115	-0.144
93.2	-0.125	-0.156
93.1	-0.134	-0.168
93.0	-0.144	-0.180
92.9	-0.154	-0.192
92.8	-0.163	-0.204
92.7	-0.173	-0.216
92.6	-0.182	-0.228
92.5	-0.191	-0.240
92.4	-0.211	-0.264
92.3	-0.229	-0.288
92.2	-0.250	-0.312
92.1	-0.268	-0.336
92.0	-0.288	-0.360
91.9	-0.307	-0.384
91.8	-0.327	-0.408

Table 4 Unit Price Adjustment for Density - Hot In-Place Recycled Asphalt Concrete Pavement		
% Lot Mean Maximum Specific Gravity	HIR Unit Price Adjustment HIR ($/m2)	
Lot Average	Design Lift Thickness	
	40 mm	50 mm
91.7	-0.345	-0.432
91.6	-0.365	-0.456
91.5	-0.384	-0.480

For lower lifts when the Lot average density is less than 90.0% and greater than 86.9%, payment will be 50% of the unit bid price.

For top lifts where the Lot average density is less than 90.0% and greater than 87.9%, payment will be 50% of the unit bid price.

For top lifts where the Lot average density is less than 88.0% and on lower lifts where the density is less than 87.0%, the Contractor shall remove and replace the mix, or on approval of the Consultant, reprocess using HIR equipment.

Table 5 Unit Price Adjustment for Marshall Air Voids - HIR		
Amount That Lot Average Air Voids (%) is	HIR Unit Price Adjustment - HIR ($/m2) Treatment Depth	
Below Lower Design Limit	**40 mm**	**50 mm**
0.1	-0.04	-0.05
0.2	-0.08	-0.10
0.3	-0.12	-0.15
0.4	-0.16	-0.20
0.5	-0.20	-0.25
0.6	-0.24	-0.30
0.7	-0.32	-0.40
0.8	-0.40	-0.50
0.9	-0.48	-0.60
1.0	-0.56	-0.70
Above Upper Design Limit	**40 mm**	**50 mm**
0.1	-0.04	-0.05
0.2	-0.08	-0.10
0.3	-0.12	-0.15
0.4	-0.16	-0.20
0.5	-0.20	-0.25
0.6	-0.32	-0.40
0.7	-0.44	-0.55
0.8	-0.56	-0.70
0.9	-0.68	-0.85
1.0	-0.80	-1.00

Note 1:

Lower and upper Air void design limits are determined from Figure 1 HIR Design Air Voids and Recovered Asphalt Penetration Limits according to the Design Recovered Asphalt Penetration.

For lower lifts when the Lot average Marshall air voids is greater than 1% above the upper design limit, payment will be at 50% of the unit bid price.

For top lifts when the Lot average Marshall air voids is greater than 1% above the upper design limit, the Contractor shall either overlay or remove and replace the previously placed mix or, on the approval of the Consultant, reprocess using HIR equipment.

For lower lifts where the Lot average Marshall air voids is greater than 1.0% below the lower design limit, payment will be at 50% of the unit bid price.

For top lift where the Lot average Marshall air voids is greater than 1.0% below the lower design limit, the Contractor shall remove and replace the mix or, on the approval of the Consultant, reprocess using HIR equipment.

Table 6
Unit Price Adjustment for Recovered Asphalt Penetration
Hot In-Place Recycled Pavement

Amount That Lot Average Recovered Penetration is (dmm @ 25 C°)		**HIR Unit Price Adjustment HIR ($/m2)**	
Below Lower Design Limit Shown in Table 1	**Above Upper Design Limit Shown in Table 1**	**Treatment Depth**	
		40 mm	**50 mm**
≤ 10	0	0.00	0.00
11	1 - 2	-0.06	-0.08
12	3 - 4	-0.08	-0.10
13	5 - 6	-0.10	-0.12
14	7 - 8	-0.11	-0.14
15	9 - 10	-0.13	-0.16
16	11 - 12	-0.17	-0.21
17	13 - 14	-0.21	-0.26
18	15 - 16	-0.25	-0.31
19	17 - 18	-0.29	-0.36
20	19 - 20	-0.33	-0.41
21	21 - 22	-0.38	-0.48
22	23 - 24	-0.44	-0.55
23	25 - 26	-0.50	-0.62
24	27 - 28	-0.55	-0.69
25	29 - 30	-0.61	-0.76

For any lifts when the Lot average recovered asphalt penetration is greater than 30 dmm above the upper specification limit, the Contractor shall remove and replace the previously placed mix.

For any lifts where the Lot average recovered asphalt penetration is greater than 25 dmm below the lower specification limit, payment will be at 50% of the unit bid price.

1.10 ACCEPTANCE TESTING FOR CONTRACTS WITH SMALL QUANTITIES (LESS THAN 1000 TONNES) OF ASPHALT CONCRETE PAVEMENT (ACP)

1.10.1 AMENDMENTS TO SPECIFICATION 3.50, ASPHALT CONCRETE PAVMENT - EPS:

1.10.1.1 **In section 3.50.1.2.5 Lot, items (i) and (ii) are deleted and replaced with the following; and item (iii) is renumbered to item (ii):**

(i) The entire quantity of ACP will normally be considered as one Lot, not withstanding the conditions outlined in item (ii).

1.10.1.2 **Table 3.50.4.3 Quality Control Testing Requirements - Managed QA Testing Projects, is replaced with the following table:**

Test	Standard	Minimum Frequency
AGGREGATE PRODUCTION		See Specification 3.2
ASPHALT MIX PLANT		
1. Calibration	ATT-17	Once per project or as required
2. Inspection	ATT-16	(1)
SAMPLES		
1 Asphalt Cement	ATT-42	See Specification 5.7
2 Tack, Prime and Fog Materials	ATT-42	See Specification 5.7
3 Cold Feed Aggregate	ATT-38	(1)
4 Mix	ATT-37	(1)
5 QA Cores for Pavement Density, Asphalt Content and Gradation obtained by the Contractor at Stratified Random Test Sites chosen by the Consultant	ATT-56 ATT-5	Five core locations per Lot.
TESTS		
1 Mix Asphalt Content	AASHTO T-164, T287 or ATT-12 or ATT-74	(1)
2 Correction Factors	ATT-12, Part III or ATT-74, Part II	As Required
3. Mix Moisture Content	ATT-15	(1)
4. Aggregate Sieve Analysis	ATT-26	(1)
5. Field Formed Marshall Briquettes	ATT-13	(1)
6. Density Immersion Method, Saturated Surface Dry	ATT-7	(1)
7. Void Calculations, Cores or Formed Specimens	ATT-36	(1)
8. Temperatures	ATT-30	(1)
9. Percent Compaction, Cores or Nuclear Density	ATT-67, ATT-5 or ATT-11	(1)
10 Random Test Site Locations	ATT-56	(1)
11 Correction Factors, Nuclear Moisture-Density Measurement	ATT-48	(1)

Notes: (1) Minimum Frequency not Specified.

1.10.1.3 **The following is added to section 3.50.4.4.2.1, Pavement Sampling for Density, Asphalt Content and Gradation:**

Samples for asphalt content and gradation may be obtained by the consultant using the Sampling Mix Behind Paver method described in ATT-37. If the number of mix samples is less than five and the test results on the loose mix samples indicates that the mix is in penalty or rejection for asphalt content or in rejection for gradation, then additional cores samples shall be taken by the Contractor at locations as determined by the Consultant in order to perform the minimum five tests per Lot.

Testing for pavement density may be waived at the discretion of the Consultant. Pavement sampling for density will consist of 5 cores taken by the Contractor at locations as determined by the Consultant. If field formed Marshall density values are not available for compaction comparison the Consultant will determine the average Maximum Specific Gravity (Test Method ASTM D2041) on the 5 core samples to use for compaction comparison. Price adjustments and acceptance criteria will then be based upon Table 3.53A Unit Price Adjustments for Density.

1.10.1.4 **All references to Table 3.50A shall mean Table 3.53A.**

1.10.1.5 **The following is added to section 3.50.4.4.2.2, Pavement Sampling for Smoothness:**

QA smoothness testing may be waived at the discretion of the Consultant. Acceptance and rejection criteria for smoothness, including lump sum sublot assessments, will not apply if the Consultant elects not to undertake smoothness testing. If the Consultant does undertake QA smoothness testing then all acceptance and rejection criteria will apply, including lump sum sublot assessments and penalties for bump or dip defects over 8 mm.

1.10.1.6 **In Section 3.50.4.4.2.3 Asphalt Mix Sampling, the word "will" is changed to "may".**

1.10.1.7 **The following changes are made to Section 3.50.4.7.3.2, Inspections By The Consultant:**

1.10.1.7.1 <u>The third sentence of the second paragraph of item (i) Inspections During Construction, is replaced with the following:</u>

During the inspection(s) of the top lift, the Consultant will identify and record any areas of slight, moderate and severe segregation and any areas of centre-of-paver streak.

1.10.1.7.2 <u>Item (ii) 'Inspection Following Construction' is deleted.</u>

1.10.1.8 **In Section 3.50.6.2.1 End Product Acceptance, the term "Lot Mean Marshall density" is replaced with the following:**

"Lot Mean Marshall density or the Lot Mean Maximum Specific Gravity".

1.10.1.9 **In Section 3.50.7.1.2 Segregation Payment Adjustments, the following text is deleted from the first sentence of the second paragraph:**

"either during construction or during the inspection conducted 2 weeks after the completion of paving work,"

1.11 TRUCK HAUL REGISTRY

The second paragraph of Subsection 4.5.3.1, **Vehicle Requirements**, is replaced with the following:

"Each truck used for hauling shall have current registration with the Alberta Sand and Gravel Association (ASGA) Registry, or equivalent registry system designed to allow the public to lodge haul related complaints.

Each haul truck shall display signs on three sides of the vehicle indicating the name of the registry system, and displaying a clearly visible toll-free telephone contact number and unique truck identifier. The truck identifier shall have no more than 8 characters, with a minimum height of 150 mm per character.

The registry system used shall forward all complaints received to the Contractor; shall record the nature of the complaint; and shall be able to provide the Department with summary statistics when requested.

All complaints received by the Contractor shall be handled in accordance with Section 1.2.42, Due Care, Claim Settlement and Hold Harmless, of Specification 1.2, General.

Prior to a haul truck being used, the Contractor shall provide the Consultant with identification information including the haul truck number, truck registration identifier, allowable gross vehicle weight and tare vehicle weight."

1.12 SUPPLY OF AGGREGATE - CONTRACTOR'S SUPPLY WITH OPTION

The Contractor shall supply the aggregate for this Contract. The Contractor has the option of supplying aggregate from the source controlled by the Department identified in the special provisions or from other sources of his own choice. No other source controlled by the Department may be used for the gravel component of the aggregate. However, sources controlled by the Department may be used for the blend sand component of the aggregate subject to the approval of the Department.

1.13 SUPPLY OF AGGREGATE - CONTRACTOR'S SUPPLY WITH NO OPTION

The Contractor shall supply the aggregate for this Contract from sources of his own choice with the exception that the gravel component of the aggregate may not be obtained from a source controlled by the Department. However, sources controlled by the Department may be used for the blend sand component of the aggregate, subject to the approval of the Department.

1.14 SUPPLY OF AGGREGATE – DESIGNATED SOURCE

The Contractor shall supply the aggregate for this Contract from the source(s) identified in the Special Provisions. No other source may be used for the gravel component of the aggregate, except that other sources including those controlled by the Department may be used for the blend sand component of the aggregate, subject to the approval of the Department.

No payment will be made for aggregate extracted from sources controlled by the Department.

If blend sand is supplied from a source that is not controlled by the Department, the supply of aggregate will be considered incidental to the Work and no separate or additional payment will be made.

1.15 INTERIM SUPPLY OF MATERIALS

The Contractor will have the option of requesting interim payment for the supply of materials for those items identified in the Special Provisions. This specification will only apply when the supply of materials is considered incidental to the Work, and when interim supply of materials is not addressed in the applicable specification.

Interim payments for the supply of materials are not considered as value of work completed on bid items where payment for Mobilization is being considered.

1.15.1 GENERAL

Interim payments for the supply of material will be made under the following conditions:

(i) The Contractor submits a written request for interim payment to the Consultant.

(ii) Supplied materials will be inventoried for more than 30 days before incorporation into the Work.

(iii) The supply, fabrication, inspection and testing of the supplied materials has been completed in accordance with the applicable specifications.

(iv) There are no separate payments specified for interim supply of materials in the applicable specification.

(v) The Contractor provides the Consultant with written consent of Surety to the interim payment, or with security in the form of an Irrevocable Letter of Credit in the amount of the total interim payment.

Interim payment will not imply acceptance of the materials by the Consultant.

1.15.2 INTERIM PAYMENT FOR SUPPLY OF MATERIALS

Interim payments will be based on actual Supplier invoices, or 50% of the applicable bid item incorporating the materials; whichever is less.

Interim payments for the supply of materials will be made monthly. Interim payment will be considered a portion of the unit price or lump sum price bid for the Work that incorporates the materials supplied. The interim payment will be deducted when payment is made under the applicable bid item or when all Work covered by applicable bid item has been completed.

1.16 ADJUSTMENT OF COMPLETION DATE AND LIQUIDATED DAMAGES FOR BRIDGE STRUCTURE WORK

The following changes are applicable to the bridge structure portion of the work only:

1.16.1 SECTION 1.2.19, ADJUSTMENT OF COMPLETION DATE:

1.16.1.1 **In the first paragraph of Clause 1.2.19(c)(vi), the words "roadway surface" are changed to "Bridge Structure".**

1.16.1.2 **The second sentence of the second paragraph of Clause 1.2.19(vi) is deleted.**

1.16.1.3 **The last two paragraphs of Section 1.2.19 starting with "If an adjustment to the..." are deleted.**

1.16.2 SECTION 1.2.20, FAILURE TO COMPLETE ON TIME:

1.16.2.1 **In clause 1.2.20(i)(a) - “$1,350.00" is replaced with “$800.00".**

1.16.2.2 **Item (b) of subsection 1.2.20(i) is deleted.**

1.17 DURATION OF WORK AND SITE OCCUPANCY FOR BRIDGE STRUCTURE CONSTRUCTION

1.17.1 THE FOLLOWING SHALL APPLY TO THE BRIDGE STRUCTURE PORTION OF THE WORK ONLY:

1.17.1.1 **The Contents of Section 1.2.21, DURATION OF WORK AND SITE OCCUPANCY, are replaced in their entirety with the following:**

1.2.21.1 General

When the Contract contains a bid item for “Site Occupancy - Bridge Structures”, bidders shall indicate the number of Calendar Days required to complete the Bridge Structure Work under the “estimated quantity” column of the unit price schedule and extend that number of days times the unit price per day as shown, to get the total bid for “Site Occupancy - Bridge Structures”.

1.2.21.2 Calculation of Calendar Days for Site Occupancy

Calendar Days for Site Occupancy will be calculated as whole days. The assessment of Calendar Days for “Site Occupancy - Bridge Structures” will commence on the day of the first disturbance of the right-of-way for the bridge portion of the Work. Thereafter, every day will be counted as a Calendar Day for site occupancy with the exception of when:

- The Contractor is prohibited from working due to restrictions imposed by local bylaws after the contract has been awarded or as a result of directives from the Consultant or the Department.

- The Contractor is unable to work on the project, or works less than half of a normal working day for reasons of inclement weather or conditions resulting from inclement weather. A normal working day shall comprise the average duration worked by the Contractor on the proceeding 5 uninterrupted working days.

- The Contractor pre-schedules interruptions to continuous prosecution of the Work as a result of the desire to schedule certain phases of the Work at different times.

- The Contractor schedules employee time off subject to the conditions specified herein.

- The Contractor is working solely on preparing and installing temporary environmental measures as detailed in the department manual entitled "Environmental Construction Operations (ECO) Plan Framework.

1.2.21.3 Employee Time Off

The Contractor will be granted a maximum of eight non-charged days per thirty day period for the purpose of allowing employee time off, providing:

- The Consultant is given at least seven days notice.

- There is no construction ongoing which requires the presence of the Consultant.

- No more than five consecutive days are taken at one time.

The thirty day period will start at the commencement of work as defined above and any of the time-off days not taken in a specified thirty day period will not be permitted to be used in subsequent periods. When the estimated number of Calendar Days required to complete the project is less than thirty, the number of allowable days off for this purpose will be prorated.

1.2.21.4 Conclusion of Site Occupancy

Assessment of Calendar Days for Site Occupancy will cease entirely only once the entire Work has been completed and in the opinion of the Consultant, the project is ready for the construction completion inspection as detailed in Section 1.2.53, Construction Completion and Acceptance. Calendar Days for Site Occupancy will not be assessed during the completion of any deficiencies identified in the construction completion inspection.

1.2.21.5 Statements, Extensions and General

The Consultant will, on a weekly basis, prepare a statement for the Contractor showing the number of Calendar Days for Site Occupancy worked on the contract during that week. In the event that the Contractor disagrees with the number of Calendar Days for Site Occupancy shown on the statement, he shall within one week of the date of such statement, notify the Consultant in writing of reasons for the disagreement, otherwise the number of Calendar Days for Site Occupancy shown on the statement shall be considered final.

An increase in the number of Calendar Days for Site Occupancy to complete the Work will be considered for an increase in quantities, late delivery of Department supplied materials, design changes to the project, or any other reason which in the opinion of the Consultant is outside the control of the Contractor, or could not have been reasonably foreseen by the Contractor.

If the Contractor believes there is an entitlement to an extension of the number of Calendar Days for Site Occupancy required to complete the Work, he shall, prior to the completion of the Work, submit a written request to the Consultant setting out the reasons for the request, justifying the number of additional days required.

This provision for Duration of Work in no way negates or mitigates the conditions of Sections 1.2.19, Adjustment of Contract Completion Date, 1.2.20, Failure to Complete on Time or Section 1.2.14, Commencement and Scheduling of Work.

1.2.21.6 Payment

Payment for “Site Occupancy - Bridge Structures” will be made as follows:

If the Contractor completes the bridge structure work in the exact number of calendar days entered in the “Site Occupancy - Bridge Structures” bid item, no payment will be made.

If the Contractor completes the bridge structure work in fewer Calendar Days for Site Occupancy than the number entered in the “Site Occupancy” bid item, a payment equal to the unit price per day as shown, multiplied by the difference between the estimated and actual number of Calendar Days for Site Occupancy will be made.

If the Contractor completes the bridge structure work in more than the number of Calendar Days for Site Occupancy entered in the “Site Occupancy - Bridges Structures” bid item, an assessment equal to the unit price per day as shown, multiplied by the difference between the estimated and actual number of Calendar Days for Site Occupancy will be made and charged to the Contractor. This assessment will be deducted from any monies due the Contractor.

1.18 LANE CLOSURE FOR BRIDGE STRUCTURES

1.18.1 GENERAL

In addition to the requirements of Section 1.2.21, Duration of Work and Site Occupancy, this contract contains a bid item for "Lane Closure - Bridge Structures".

Bidders shall indicate the number of Calendar Days during which travel lane widths will be restricted or lanes will be closed, under the “estimated quantity” column of the unit price schedule and extend that number of days times the unit price per day as shown, to get the total bid for “Lane Closure - Bridge Structures".

1.18.1.1 **Calculation of Calendar Days**

Calendar Days will be calculated as whole days. The assessment of Calendar Days will commence on the first day that the clear roadway is restricted in width and/or a travel lane is closed. Thereafter, every day will be counted as a Calendar Day with the exception of when:

- the Contractor is prohibited from working due to restrictions imposed by local bylaws after the Contract has been awarded or as a result of directives from the Consultant or the Department.

1.18.1.2 **Conclusion of Lane Closure**

Assessment of Calendar Days will cease entirely once the roadway is open to unimpeded flow of traffic with all the following conditions:

- continuous smooth, paved intact travel surface
- curb to curb unobstructed clear roadway width
- traffic control removed and traffic fully restored

1.18.1.3 **Extensions**

An increase in the number of Calendar Days for Lane Closure - Bridge Structures will be considered for an increase in quantities, late delivery of Department supplied materials, design changes to the project, or any other reason which in the opinion of the Department is outside the control of the Contractor, or could not have been reasonably foreseen by the Contractor.

If the Contractor believes there is an entitlement to an extension of the number of Calendar Days for Lane Closure - Bridge Structures, he shall, prior to the completion of the Work, submit a written request to the Consultant setting out the reasons for the request, justifying the number of additional days required.

1.18.1.4 **Payment**

Payment for Lane Closure - Bridge Structures will be made as follows:

If the Contractor restricts the roadway width or closes a travel lane for the exact number of Calendar Days bid for "Lane Closure - Bridge Structures", no payment will be made.

If the Contractor restricts the roadway width or closes a travel lane for fewer Calendar Days than the number bid for "Lane Closure - Bridge Structures", a payment equal to the unit price per day as shown, multiplied by the difference between the estimated and actual number of Calendar Days will be made.

If the Contractor restricts the roadway width or closes a travel lane for more than the number of Calendar Days entered in the "Lane Closure - Bridge Structures" bid item, an assessment equal to the unit price per day as shown, multiplied by the difference between the estimated and actual number of Calendar Days will be made. This assessment will be deducted from any monies due the Contractor.

1.19 SITE OFFICES FOR BRIDGE STRUCTURE CONSTRUCTION

1.19.1 SECTION 1.2.16, SITE OFFICES FOR BRIDGE STRUCTURE CONSTRUCTION

For this project, Section 1.2.16, SITE OFFICES FOR BRIDGE STRUCTURE CONSTRUCTION, is deleted in its entirety.

1.20 AMENDMENT TO SPECIFICATION 1.2, GENERAL, RE: COURSE OF CONSTRUCTION INSURANCE

1.20.1 FOR THIS PROJECT COURSE OF CONSTRUCTION INSURANCE IS OPTIONAL.

1.20.2 THE FOLLOWING IS ADDED AS THE SECOND PARAGRAPH OF CLAUSE (IV), OF SECTION 1.2.10, INSURANCE

Notwithstanding the optional status of Course of Construction insurance, and further to General Specification 1.2.46, DAMAGE TO WORK, the Contractor shall be solely responsible for damage to the bridge structure, bridge culvert, or building structure caused by the negligence of the Contractor, his employees, agents or sub-contractors.

X	SUPPLEMENTAL SPECIFICATIONS	
	Specification	**General Description**
	6.15	Fish Capture and Release

6.15 FISH CAPTURE AND RELEASE

6.15.1 GENERAL

The Work shall include the capture, salvage and release of fish that are trapped or stranded as the result of the Contractor's operations, at locations identified in the Special Provisions, and in accordance with General Specification 1.2.50, "Environmental Management".

Fish capture shall be performed prior to dewatering, and in such manner that will minimize the injury to the fish.

6.15.2 MATERIALS

All materials required for fish capture, salvage and release shall be supplied by the Contractor.

6.15.3 QUALIFIED AQUATIC ENVIRONMENTAL SPECIALIST

The Contractor shall acquire the services of a Qualified Aquatic Environmental Specialist (QAES) as defined in Alberta Environment's Code of Practice for Watercourse Crossings to perform the capture, salvage and release of fish. The Contractor shall have the option of obtaining the services of the Consultant's QAES to perform the capture, salvage and release Work, provided the Consultant's QAES is not a direct employee of the Consultant. The name and contact information of the Consultant's QAES will be provided in the Special Provisions.

The Contractor shall not proceed with any Work which may affect trapped or stranded fish unless the QAES is on-site. The Contractor shall be responsible for all aspects of the fish capture, salvage and release operations including but not limited to the following:

- Obtaining the Fish Research License from Alberta Sustainable Resource Development (SRD); and
- Following polices regarding fish capture and release, including the Alberta Fisheries Management Policy with respect to injuries to fish.

Additionally, the Contractor shall be responsible for the preparation of a written management plan that includes:

- Site preparations for fish capture, salvage, and release;
- Locations for fish capture;
- Fish isolation methods;
- Locations for cofferdams, nets, and other capture structures;
- Ensuring that pump intake screens conform to all Regulatory requirements;
- Locations for related equipment and system set up;
- Water depths required for fish capture, including drainage, or draw-down methods;
- Fish release location;
- Number of working days for fish capture activity;
- Plans for ice removal, if required;
- Plans for the protection of the fish during all aspects of fish capture, salvage, and release;
- A final report as required under the Fish Research License.

6.15.4 SUBMITTALS

The Contractor's ECO Plan shall include a Fish Capture and Release Management Plan prepared by his QAES, and based on the requirements of Section 6.15.3.

The QAES shall record all fish capture and release field activity, as well as the results of said activities. The QAES shall prepare a report in accordance with the Fish Research License.

A copy of the final report shall be submitted to the contact person at the Department of Fisheries and Oceans, Canada.

Copies of the report shall be submitted to the Consultant within 2-weeks of the completion of fish release.

6.15.5 CONSTRUCTION

The Contractor shall not commence any fish capture, salvage and release work until the Fish Capture and Release Management Plan has been accepted by the Consultant. All work shall be performed in accordance with the Fish Capture and Release Management Plan unless otherwise determined by the Consultant.

The Contractor shall ensure an ice-free pool, if required, sized to suit the QAES recommendations, is maintained throughout all fish capture and release operations.

All fish shall be captured within the area specified, and released at an acceptable location in the downstream water body. Fish shall be captured by electrofishing, netting, seining, trapping, or other method acceptable to the Consultant.

6.15.6 MEASUREMENT AND PAYMENT

Payment for this Work will be made at the lump sum price bid for "Fish Capture and Release". The lump sum price will be considered full compensation for all labour, materials, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Consultant.