Use this section to specify requirements for site remediation of hydrocarbon contaminated soil, including excavation, remediation of hydrocarbon contaminated soil, and backfilling.

Co-ordinate this Section with Section 01390 ECO Plan and Section 01391– Environmental Protection to avoid conflicting requirements.

Design the Landfarming Treatment Process to comply with Alberta Environment's 'Code of Practice for the Land Treatment of Hydrocarbons" latest edition.

Unit Prices for site remediation of hydrocarbons:

This Section is taken from the BMS of Alberta Infrastructure and modified for the CWMS. "Unit prices" are specified in the CWMS differently from the BMS. "Unit Prices" in the CWMS are NOT specified within each "work result" or technical section, but specified in a combined Section 01280 Schedule of Measurement. Incorporate the following suggested unit price clauses into Section 01280 Measurement Schedule, and Section 00431 Schedule of Prices of the CWMS. Select the scope clause from the "Unit description", and select the measurement clause from the "Unit of Measurement" ***and modify to CWMS language***. The payment method i.e. Lump Sum, cubic meter, etc. should be removed from the Unit of Measurement and placed in Section 01280 as shown in the 01280. Co-ordinate measurement and payment between sections to ensure that it is clear under which item this work will be compensated.

.1 Mobilization and Demobilization [Site Preparation]

.1 Unit Description: See Section 01280 Measurement Schedule, and if necessary add for the following items: for site preparation installing temporary fencing, access, warning and traffic control signage, barricades, utility locates,

… "And all related work and materials for which payment is not included elsewhere."

.2 Unit of Measurement: Lump Sum. Mobilization and Demobilization includes interim and partial mobilization and demobilization activities required to perform the Work of the Contract.

.2 Uncontaminated Topsoil Excavation

.1 Unit Description: Striping, stockpiling on-site and replacing after excavation is backfilled. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Cubic meter by [cut measure] [truck box measure] [stockpile].

.3 Excavate, Stockpile and Replace Uncontaminated Overburden

.1 Unit Description: Excavating, stockpiling on site, replacing with compacted uncontaminated overburden in area to be excavated for treatment. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Cubic Meter by [cut measure] [truck box measure] [stockpile measure].

.4 Excavate, Hydrocarbon Impacted Soil using ALLU Bucket Process

.1 Unit Description: Excavating, loading and hauling hydrocarbon impacted material to treatment area. Treating material to criteria using the ALLU Bucket process until it meets specified criteria. Replacing and compacting treated material in excavation. [Includes the cost of handling and disposing of contaminated and uncontaminated groundwater.] And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Cubic meter by [cut measure] [truck box measurements] [lump sum] [number of passes].

SPEC NOTE: If lump sum, cubic meter or truck box measure are selected ensure adequate analytical information is available in the documents that will allow bidders to determine amount of treatment effort required.

SPEC NOTE: If contaminated groundwater handling and disposal is NOT to be included in the scope description of item .4, refer to clause 3.8 of this Section, specify the collection, treatment or disposal of groundwater be valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.

.5 Excavate Hydrocarbon Impacted Soil and Landfarm

.1 Unit Description: Excavating, loading and hauling hydrocarbon impacted material to treatment area. Spreading material in thickness specified. Landfarming material until specified criteria has been met. Replacing and compacting treated material in excavation. [Include the cost of handling and disposing of contaminated and uncontaminated groundwater.] And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement:

.1 Cubic meter by [cut measure] [truck box measure] [lump sum].

.2 Landfarm: [Lump Sum] [per landfarm event].

SPEC NOTE: If lump sum, cubic meter or truck box measure are selected ensure adequate analytical information is available in the documents that will allow bidders to determine amount of treatment effort required.

SPEC NOTE: If contaminated groundwater handling and disposal is NOT to be included in the scope description of item .5, refer to clause 3.8 of this Section, specify the collection, treatment or disposal of groundwater be valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.

.6 Excavate Hydrocarbon Impacted Soil and Dispose from Site

.1 Unit Description: Excavating, loading and hauling off site hydrocarbon impacted material to an approved disposal area or landfill. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measure: Cubic meter by [cut measure] [truck box measure] [lump sum].

.7 Imported Clay Fill

.1 Unit Description: Supplying, hauling, placing and compacting. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Cubic meter by [cut measure] [truck box measure].

.8 Imported Topsoil

.1 Unit Description: Supplying, hauling, and placing. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Cubic meter [measured in excavation] [truck box measure] [tonne].

.9 Imported Gravel

.1 Unit Description: Supplying, hauling, placing and compacting. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Cubic meter [measured in excavation] [truck box measure] [tonne].

.10 Restore Treatment Area after [ALLU Bucket] [Landfarm] Treatment

.1 Unit Description: Leveling treatment area, [placing synthetic liner] [constructing clay liner]. Supplying clay for construction [from on site overburden stockpile] [Contractors source off-site]. Restoring area after treatment of contaminated material. And all related work and materials for which payment is not included elsewhere.

.2 Unit of Measurement: Lump Sum.

Edit this section to suit the Contract requirements.

Heading of Specification Text **Specification Note**

Part 1 General

1.1 Intent

1.2 Definitions

1.3 Testing of Materials

Part 2 Products

Heading of Specification Text		Specification Note
2.1	Fill Materials	
Part 3	Execution	
3.1	Site Preparation	
	.2	If utility lines are to be relocated include appropriate specification sections and method of payment consistent with the CWMS specification approach.
	.5	Edit as required.
3.2	Excavate and Stockpile Uncontaminated Topsoil and Overburden	Consult with the Project Manager to determine the intended future land usage.
	.4	Edit as required.
	.5	To complete the table use parameters in Tables 1 and 2 of the document entitled "Risk Management Guidelines for Petroleum Storage Tank Sites". Use the values appropriate for the soil type and the intended land use.
3.3	ALLU Bucket Treatment of Hydrocarbon Contaminated Material	
	.1.2	Select one of two choices for clause 1.2. Edit as required.
3.4	Landfarm Treatment of Hydrocarbon Contaminated Material	
	.1.2	Select one of two choices for clause 1.2. Edit as required.
	.2.3 and .2.4	Edit as required.
3.5	Excavate and Dispose Off Site Hydrocarbon Contaminated Material	
3.6	Backfill Excavated Areas	

Heading of Specification Text		Specification Note
.1, .3, and .4		Edit as required.
3.7	Restore [ALLU Bucket] [Landfarm] Treatment Area	
.2		Select one of two choices for clause .2.
3.8	Collection and Treatment of Groundwater	If further restoration is required add a new Section 029xx (Restoration of Sitework) and other sections as appropriate.
.5		For method of payment, include in appropriate payment item in Section 01280 as shown above in "Unit Prices for site remediation of hydrocarbons". **OR** **When the quantity of this work will be difficult for the bidder to estimate, and the payment for costs under the above unit price payment method, specify valuation in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.**

END OF COVER SHEET

Use this section to specify requirements for demolition, salvage, and removal of the more commonly encountered items including main canal conveyance structures, turnouts, drain inlets, culverts, fencing, and associated items such as pipe, gates, riprap, and miscellaneous equipment. Use this section when there is a significant amount of demolition, salvage, and removal and it is not appropriate to include this work as a subsidiary requirement of other work.

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 Submittals	
1.2 Work Sequencing	
.1	Specify any restrictions to the timing of the demolition or salvage and co-ordinate with Section 01110 – Summary of Work.
[.2]	Include if required. Provide details of backfill materials on the Drawings.
1.3 Recyclable Materials	
Part 2 Products - Not Used	
Part 3 Execution	
3.1 General	
.7	Edit as required.
[.8]	Include if applicable.
3.2 Excavation and Backfill	Co-ordinate measurement and payment between sections to ensure that it is clear under which item this work will be compensated.
.2	Edit as required.
3.3 [Demolition and Removal of	List all structures and their locations if applicable that the

Heading of Specification Text	**Specification Note**
Structures]	Minister has no interest in salvaging in whole or in part.
3.4 [Materials Salvaged by the Contractor and Retained by the Minister]	List any materials or equipment from a structure in which the Minister has an interest. Specify the location of the materials to be salvaged and the location of the storage area.
[.3 to .5]	Include and edit as required.
3.5 [Salvage of Riprap]	
.1	Edit as required.
[.2]	Include this clause where small quantities of existing riprap will be salvaged and reused in the Work. Where large quantities of riprap will be salvaged and stockpiled for later use as Minister supplied materials, co-ordinate with Section 02330 – Earthwork Materials.
3.6 [Demolition of Concrete Structures]	Include this clause where demolition and removal of existing concrete structures are required.
.2	Edit as required.
3.7] [Demolition of Fencing]	Include this clause where demolition and removal of existing fencing is required.
3.8 Disposal	Co-ordinate this clause with Section 01391– Environmental Protection.
.1	Edit as required. Specify the location of the on-Site waste disposal areas on the Drawings.
.2	Edit as required to indicate materials that can be buried within an on-Site waste disposal area.
3.9 Clean-up	

END OF COVER SHEET

Use this section to specify requirements for site clearing and grubbing. Use this section when there is a significant amount of clearing and grubbing and it is not appropriate to include this work as incidental to other work.

Edit this section to suit the Contract requirements.

Heading of Specification Text			**Specification Note**
Part 1	General		
1.1	Submittals		
Part 2	Products	- Not Used	
Part 3	Execution		If a large number of trees with a stump diameter of greater than 125 mm are to be removed, give consideration to including provision for the salvage of these trees for further use (lumber, pulp).
3.1	Preparation		
	[.1]		Include if required.
3.2	Removal		
3.3	Disposal		Edit this clause as required, if burning will not be permitted at the Site. Co-ordinate with clause 1.1 and Section 01391 – Environmental Protection.
	.4		If this clause is used, specify a waste disposal area on the Drawings.

END OF COVER SHEET

Use this section to specify requirements for Topsoil and Subsoil stripping. This section applies to stripping requirements for Site areas that will be affected by the Temporary and Permanent Work including excavation and borrow areas; fill placement areas; temporary roads including temporary access roads, haul roads, detours; construction facilities, lay down, parking, site office areas; and stockpile areas, **including** Topsoil stockpiles.

Normal practice is to reclaim areas that will be returned to its original or equivalent land use in the foreseeable future, and where productivity of the land is a concern. This will typically require that topsoil and subsoil, if present, are stripped and subsequently replaced on areas where significant disturbance has occurred (i.e. excavation or fill placement). Reclamation will also apply to any private lands.

For areas that will not be returned to original or equivalent land use, and where productivity of the land is not a concern, these areas are normally landscaped. For landscaped areas, only the topsoil is stripped and replaced. This will usually also apply to lands within the permanent right-of way for the project.

This approach is consistent with the Soils Conservation Act which specifies that topsoil must be conserved, and that the lands be returned to equivalent productivity. The Act is silent on the question of subsoil stripping, however practice has shown, that in most situations, stripping and replacing of subsoil is required in order to meet that objective.

For canal rehabilitation projects, the typical approach is to strip only topsoil within the canal right of way, and to strip topsoil and subsoil within those borrow areas that will be returned to its original or equivalent land use. For a dam and reservoir project, typically only topsoil is stripped from required excavation areas including the footprint of the dam and spillway channels, while topsoil and subsoil is stripped within borrow areas that will be returned to its original or equivalent land use.

For sites that are sufficiently large or complex, the involvement of a soils specialist as part of the environmental study phase or preliminary design phase to survey the site and develop stripping recommendations may be warranted. This requirement, as well as the criteria that will be used to establish topsoil and/or subsoil stripping areas, should be reviewed with Alberta Transportation. This may include having a Pre-Disturbance Assessment conducted.

Edit this section to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	Definitions	Topsoil and Subsoil definitions are from "glossary of Reclamation and Remediation Terms used in Alberta" by Alberta Environment dated May 2002.
	.1 & .2	Edit if required to suit the Site conditions.
	[.3]	Include and co-ordinate with clause 3.3 if required.
1.2	References	
	[.4]	Include if required.
[1.3]	[Submittals]	Include this clause where a large amount of stripping is required.
[1.4]	[Pre-Disturbance Assessment by the Minister]	Include if required and coordinate with Section 000300 – Information Documents.
[1.5]	[Pre-Disturbance Assessment by the Contractor]	Include if required and coordinate with Section 002315 – Excavation or Section 002316 – Canal Excavation.
Part 2	Products - Not Used	
Part 3	Execution	
3.1	Preparation	
3.2	Stripping	
	.4 & .5	Edit as required.
	.6	Identify specific borrow areas where Subsoil stripping is required after Topsoil stripping.
	.7	Delete "or as established by the Minister" when stripping is performed under a Lump Sum method of payment.
3.3	[Removal of Unsuitable Organic Soils]	Include and co-ordinate with clause 1.1.3 if required. Co-ordinate with Section 02315 – Excavation or Section

Heading of Specification Text	Specification Note
	02316 – Canal Excavation.
.1 & .2	Edit as required.
3.4 Stockpiling	
.1 .2 & .3	Edit as required. Minister authorized or established stockpile areas must consider possible interference of the Work and the operations of adjacent landowners.
.6	Coordinate erosion control measures with Section 001392 – Environmental Management. If the Topsoil is to be stockpiled for a growing season then it should be protected from erosion. A cover crop is preferred since it assists with keeping the stockpiles biologically active (and better for reclamation) and reduced weed infestation.
.7 & .8	Edit as required.

END OF COVER SHEET

Use this section to specify requirements for temporary care of water provisions that are to be designed, constructed, and maintained by the Contractor.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Regulatory Requirements	Co-ordinate this clause with Section 01410 - Regulatory Requirements.
	.1	Edit as required.
1.2	Site Conditions	Use this clause to specify any special conditions or restrictions that are appropriate.
	[.1, .2, .3 & .4]	Modify or include additional clauses as required to suit the Site conditions. Co-ordinate clause 1.2.2 with Section 01110 – Summary of Work.
1.3	Design of Care of Water Provisions	
	[.4]	Include and edit as required.
1.4	Submittals	
	.2	Insert the number of days.
	[.4]	Co-ordinate this clause with clause 1.5.
[1.5]	[Quality Control]	Review the purpose of water quality testing with the INFTRA project manager, considering the Site conditions and the anticipated methods of construction. Co-ordinate this clause with other sections such as Section 01390 – Environmental Management, Section 01391 – Environmental Protection, Section 02242 – Turbidity Barriers. Determine the testing criteria, the location and the frequency of the testing required.
[1.6]	[Quality Assurance]	As for clause [1.5] review the purpose, the criteria, the location and the timing and frequency of the testing. Co-ordinate with the environmental sections and Section

Heading of Specification Text			**Specification Note**
			02242 – Turbidity Barriers.
Part 2	Products	- Not Used	
Part 3	Execution		
3.1	General		
3.2	Environmental Protection		Co-ordinate this clause with the environmental sections.
	[.3]		Edit as required.

END OF COVER SHEET

Use this section to specify requirements for fish capture and release by the Contractor. The term fish salvage is discouraged.

DO NOT use payment for this work as a separate Lump Sum, include in Mobilization and Demobilization, Care of Water in Section 01280 Measurement Schedule, or include clause 1.4 and valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.

Review the current Supplemental Specifications of the Standard Specifications for Highway Construction for related information:

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, in accordance with Section 1.2.50, Environmental Management, of Specification 1.2, General.

The requirements detailed in the following specifications will be necessary only in the event that the watercourse is deemed to be fish bearing and that there is a likelihood that fish may be present at the time of construction.

Edit this section to suit the Contract requirements.

Heading of Specification Text			**Specification Note**
Part 1	General		
1.1	General		Edit as required
1.2	References		Obtain FC&R policies from Alberta Sustainable Resources including those dealing with injuries to fish.
1.3	Submittals		
[1.4]	Payment		Since the scope of work including performance requirements cannot be clearly defined, it will valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.
Part 2	Products	- Not Used	
Part 3	Execution	- Not Used	.

END OF COVER SHEET

Use this section to specify requirements for excavation. This section is primarily applicable for those projects where most of the excavation involves soil materials, and only minor amounts of rock excavation is expected.

For excavation required on canal rehabilitation projects, use Section 02316 – Excavation [Canal].

For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required.

Carefully co-ordinate this section with Section 01275 – Measurement Rules, Section 01280 – Measurement Schedule and Section 02332 – Waste Fill Placement.

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 Definitions	
.1	Edit as required.
[.4]	Include if required, and co-ordinate with clause 3.3.4 and clause 3.6.
[.6]	Include if required, and co-ordinate with Section 02330 – Earthwork Materials.
1.3 Submittals	
Part 2 Products - Not Used	
Part 3 Execution	
3.1 Excavation - General	
3.2 Excavation Lines	

Heading of Specification Text		Specification Note
3.3	Protection	
	[.4]	Include if required, and co-ordinate with clause 1.1.4 and clause 3.6.
3.4	Common Excavation	
	.3, .4, & .5	Edit as required.
3.5	Borrow Area Excavation	
	.1, .3, & .6	Edit as required.
3.6	[Structure Excavation]	Include and edit as required. Co-ordinate with clauses 1.1.4 and 3.3.4.
3.7	Rock Excavation	
3.8	[Stockpile Excavation of Minister Supplied Materials]	Include if required, and co-ordinate with clause 1.1.6.
3.9	Excavation Tolerances	

END OF COVER SHEET

Use this section to specify requirements for excavation on canal rehabilitation contracts that are undertaken during the non-irrigation (winter) season; and, where large quantities of rock excavation are not required.

This section is based on the premise that Wet Excavation materials will be classified as:

.1 Wet Excavation - Type 1 which consists of Wet Excavation materials that are used or disposed of locally, within a 50 m Freehaul Distance, in fills (if the material is suitable), or in Waste Fill zones against the outside slope of the new canal banks and in nearby waste disposal areas (if the material is unsuitable); or

.2 Wet Excavation - Type 2 which consists of Wet Excavation materials that are used or disposed of if fills (if the material is suitable), or in waste disposal areas (if the material is unsuitable) located beyond 50 m. Wet Excavation - Type 2 will normally include a 500 m Freehaul Distance which Overhaul will apply.

The designer must carefully assess and estimate the extent and quantities of Wet Excavation - Type 1 and Wet Excavation - Type 2. The assessment should consider subsurface conditions, required construction equipment, Wet Excavation quantities, and available room within the Site Limits for temporary stockpiling, and within the right-of way for final deposition. The design extent of Wet Excavation - Type 1 and Wet Excavation - Type 2 should be delineated on the Drawings. In general, the final classification of Wet Excavation - Type 1 and Wet Excavation - Type 2 will be made on-Site by the Minister.

Overhaul is incorporated because the Site normally extends over a significant distance, and the Work requires sorting and hauling of excavated materials over long distances to fill placement or waste disposal areas. The inclusion of Overhaul reduces the risk assigned to the Contractor, and also provides the Minister with the flexibility to use and dispose of excavated materials in the best locations. In this section Overhaul will only apply to Wet Excavation - Type 2, Common Excavation, and Borrow Area Excavation materials. This section is also based on the premise that Topsoil and Subsoil Stripping can be temporarily stockpiled locally (i.e., within the canal right of way or within the borrow area) without requiring any Overhaul. This should be confirmed by the designer for canal rehabilitation contracts that have tight Site Limits where local stockpiling of Topsoil, particularly with the canal right of way, may not be possible.

For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the

conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required.

Carefully co-ordinate this section with Section 01275 – Measurement Rules, Section 01280 – Measurement Schedule and Section 02332 – Waste Fill Placement.

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Header	Delete [Canal] in the Section name.
Part 1 General	
1.1 Detail Drawings	Ensure that the correct detail drawing is attached to this section.
1.2 Definitions	
.1	Edit as required.
.3	Ensure that Section 02234 – Topsoil and Subsoil Stripping is included in the Contract, or copy the definition.
.4	Co-ordinate with clause 3.5. Delineate the design extent of Wet Excavation - Type 1 and 2 on the Drawings.
[.8]	Include if required, and co-ordinate with clause 3.9 and Section 02330 – Earthwork Materials.
[.9]	Include Authorized Structure Over-Excavation only where Structure Excavation is included in the Lump Sum for the structure. Co-ordinate with Authorized Fill Placement in Section 02331 – Fill Placement.
.11	Co-ordinate with clause 1.2.8 and edit as required.
.12	Co-ordinate with clause 1.2.8 and edit as required.

Heading of Specification Text				Specification Note
1.3	Submittals			
Part 2	Products	-	Not Used	
Part 3	Execution			
3.1	Excavation and Overhaul - General			
3.2	Excavation Lines			
3.3	Protection			
3.4	Common Excavation			
	.2, .3, .4 & .5			Edit as required.
3.5	Wet Excavation			
	.2 & .3			Edit as required.
3.6	Borrow Area Excavation			
	.1, .3, .4 & .6			Edit as required.
3.7	Structure Excavation			
	[.3]			Include if required. Co-ordinate with 1.2.9.
	.4			Edit as required.
3.8	Rock Excavation			
3.9	[Stockpile Excavation of Minister Supplied Materials]			Include and edit this clause where stockpiles of Minister Supplied Materials are to be incorporated into the Work. Co-ordinate with clause 1.2.8.
3.10	Excavation Tolerances			
	.2 & .4			Edit as required.

END OF COVER SHEET

Use this section to specify the quality requirements for earthwork materials.

THE DESIGNER MUST REVIEW THE APPLICABILITY OF THE EARTHWORK MATERIALS FOR THE INTENDED PURPOSE/FUNCTION INCLUDING THEIR COMPATIBILITY (E.G. WHERE ONE MATERIAL SERVES AS A FILTER AGAINST ANOTHER).

Where both filtering and drainage provisions are required, sand and gravel materials, such as Fine Filter Zone 3A and Coarse Filter Zone 3B, may be used, however the designer must carefully review the intended purpose/function of these materials, and apply appropriate filtration, internal stability, segregation and durability design criteria to confirm their applicability. For example, for large, more critical applications such as for filters in dams where dispersive soils are present, the designer must confirm the suitability of the Fine Filter Zone 3A material to provide adequate filter protection by using appropriate laboratory testing of the native soils and/or consider restricting the maximum D15 size of the Fine Filter Zone 3A material to 0.3 mm. For Fine Filter Zone 3A, a natural sand should be used (i.e. rather than one produced by crushing) since it is less susceptible to particle breakdown during handling, placing and compaction. Such breakdown will increase the fines content. Similarly for Coarse Filter Zone 3B, crushed material is not preferred unless there is a compelling reason to require it. For example, crushed particles may be required where Coarse Filter Zone 3B is to be placed on a steep incline beneath concrete structures such as under a spillway chute.

For smaller, less critical facilities, the use of more readily available materials, such as FA2 fine concrete aggregate and 20-5 coarse concrete aggregate in accordance with CSA-A23.1, as a fine filter and coarse filter, respectively, can be considered where the premium cost of processing project specific materials, such as Fine Filter Zone 3A and Coarse Filter Zone 3B, is not warranted.

The Base Gravel Zone 4A, Road Gravel Zone 4B, and Gravel Fill Zone 4C gradations were derived from Alberta Transportation’s Standard Specifications for Highway Construction.

The Gravel Armour Zone 5C gradation represents the typical gradation that has more recently been employed on main irrigation canal rehabilitation projects in Southern Alberta.

In general, a two layer bedding system would be required under either Riprap Zone 6B or Riprap Zone 6C, or any coarser riprap. The designer should apply appropriate filter design criteria to establish the gradation requirements for these bedding layers. For the material gradations included in this section, Fine Riprap Bedding Zone 5A or Coarse Bedding Zone 5B can be used as the lower bedding layer. Fine Riprap Bedding Zone 5A is primarily used at locations where its purpose is to control particle migration from seepage zones or at seepage outlet areas beneath or around structures. Gravel Armour Zone 5C or Cobble Bedding Zone 5D are commonly used for the upper bedding layer with the final selection being

dependent firstly on the size of the riprap being provided and secondly on bedding material availability and processing costs.

Where a riprap size greater than Riprap Zone 6C is required, its gradation, and bedding layering and gradation requirements will have to be determined and incorporated.

Related information on filter and drainage materials and bedding and riprap materials can be found in the "Water Control Structures –Selected Design Guidelines" by Alberta Transportation and Alberta Environment, November 2004.

For Quality Control Testing, the designer must carefully review the test requirements including its frequency to confirm their adequacy for a specific project.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	General	
1.2	Definitions	
1.3	References	
1.4	Submittals	
	.2, .4, & .5	Edit as required.
1.5	Quality Control	
	.1.1	Edit table ad note as required.
	.4	Use this clause particularly where possible material sources may be infested with prohibited noxious and noxious weeds. Coordinate with Section 001392 – Environmental Management.
1.6	Quality Assurance	
	.4	Edit as required.

Heading of Specification Text		Specification Note
[1.7]	[Minister Supplied Materials]	Use this clause to specify the type, location, and quantity of materials to be supplied by the Minister and placed by the Contractor. Take care with the naming of Minister supplied material so as to avoid confusion with respect to Measurement and Payment, particularly when the Contractor is providing some of the same material.
	.1	Edit as required.
	[.4 & .5]	Include and edit as required.
Part 2	Products	
2.1	Materials	
	.3 to .7	Add and edit these clauses as required to specify the earthwork materials that are needed to suit the design and Contract requirements.
	.3 to .5	Co-ordinate and modify these clauses based on design requirements for utilization of Impervious Fill and Random Fill derived from required excavations.
	.6.2.1	Edit the gradation as required.
	.6.2.3	As noted, natural sand is less susceptible to particle breakdown during handling, placing and compaction. Such breakdown will increase the fines content.
	.6.3.1	Edit the gradation as required. For example, consideration could be given to limiting the maximum particle size to 28mm or 20mm, for the case where a Coarse Filter material is being placed in an embankment fill adjacent to Fine Filter Zone 3A as the primary drain material of the drainage blanket or finger drain.
	.6.3.3	Only when required, include and edit the requirement for fractured faces (crushed particles). Edit the requirement for fractured faces (crushed particles) to suit the material gradation.

Heading of Specification Text	Specification Note
.6.4.1, .6.5.1, & .6.6.1	Edit the gradation as required.
.6.4.2, .6.5.2, & .6.6.2	Edit the requirement for fractured faces (crushed particles) as required.
.6.7.1, .6.8.1, .6.9.1, & .6.10.1	Edit the gradation as required.
.7.2.1, .7.3.1, .7.4.1 & .7.5.1	Edit the gradation as required.

Part 3 Execution

3.1	[Stockpiling of Sand, Gravel and Rock Materials at the Source]	Use this clause on contracts where a significant volume of sand, gravel and rock materials will be processed and temporarily stockpiled at the source. Edit as required.
	.4	Edit as required.
3.2	Placement	

END OF COVER SHEET

Use this section to specify requirements for fill placement. Placement of Waste Fill is specified in Section 02332 – Waste Fill Placement.

For Quality Control Testing, the designer must carefully review the test requirements including its frequency to confirm its adequacy for a specific project including the variability of materials at the source (e.g. borrow area, gravel pits), quantity of materials, placement rates, etc.

For backfilling Authorized Structure Over-Excavation (see Section 02315 – Excavation and Section 02316 – Canal Excavation as applicable) required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this backfill be defined and classified by the Minister and measured and paid for under the applicable bid Unit Price. The use of the term Authorized Fill Placement for which payment is by Changes in the Work should be avoided whenever possible
Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	General	
	.1	Edit as required.
1.2	References	
1.3	[Definitions]	
	[.1]	Delete if Authorized Structure Over-Excavation is not specified in other sections. Co-ordinate with clause 3.3.19.
1.4	Submittals	
	.3	Edit as required.
1.5	Quality Control	
	.3.1, .3.2, .3.4, & .3.5	Include and edit as required.
1.6	Quality Assurance	
Part 2	Products	

Heading of Specification Text		Specification Note
2.1	Materials	
	.2	Edit as required.
Part 3	Execution	
3.1	Preparation	
	.3	Edit as required.
3.2	Protection	
	[.6]	Include and edit as required.
3.3	Fill Placement	
	.2, .8, & .9	Edit as required.
	[.19]	Delete if Authorized Structure Over-Excavation is not specified in other sections. Co-ordinate with clause 1.3.1.
3.4	Moisture Control	
	[.4]	Include and edit as required.
3.5	Compaction Equipment	
	[.2.1, .2.2, .2.3, .2.4, & .2.5]	Review and confirm requirements, and co-ordinate with those in clause 3.6.
3.6	Compaction Schedule	
	.1	Review and confirm requirements shown in the Table.
3.7	Placement Tolerances	
	.2 & .3	Edit as required.

Heading of Specification Text		Specification Note
[.4]		Include and edit as required.
[3.8]	[Fill Protection During Winter Stoppage]	If fill placement is specified to be discontinued over the winter period, include and edit as required.

END OF COVER SHEET

Use this section to specify requirements for waste fill placement.

Edit this section to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	References	
Part 2	Products	
2.1	Materials	
Part 3	Execution	
3.1	Waste Fill Placement	
	.4	Edit as required.
	[.5]	Include if required and co-ordinate with Contract Time specified in Section 01110 – Summary of Work to provide sufficient time for thawing of frozen materials to occur.
	.6	Confirm lift thickness.

END OF COVER SHEET

Use this section to specify the requirement/conditions a Contractor must meet when Alberta Transportation designates a source for the supply of granular or other materials.

The designer co-ordinates this section with Section 00305 – Information Documents as information relating to the source is likely to exist. Also co-ordinate with Section 01110 – Summary of Work.

Heading of Specification Test	**Specification Note**
Part 1 General	
1.1 General	
1.2 Quality Control	Edit as required for the type of material obtained.
Part 2 Materials	
2.1 Materials	Edit as required
Part 3 Execution	
3.1 Activities in Designated Sources	

END OF COVER SHEET

Use this section to specify requirements for geotextile used beneath riprap or other similar installations.

Edit this section to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	References	
1.2	Submittals	
1.3	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.2	Geotextile specified is proposed for use beneath riprap or other similar installations. The specified physical and hydraulic properties for the geotextile should be reviewed and its applicability for the proposed installation should be confirmed by the designer and revised accordingly. The required physical and hydraulic properties should be reviewed with geotextile manufacturers prior to their incorporation in this section.
2.2	Shop Fabrication	
	.1	For installations where simple overlaps are not acceptable, this clause, in conjunction with clause 3.2.4, can be used to specify sewn seams.
	.2	Use this clause to specify the roll size particularly for installations where the design requires a minimum number of seams (i.e. requires non-standard roll sizes).
Part 3	Execution	
3.1	Preparation	
3.2	Installation	

Heading of Specification Text	Specification Note
.3	Edit as required.
.4	Edit as required in conjunction with clause 2.2.1.
.6	Co-ordinate with clauses 2.2.2 and 3.2.4 and include if required.

END OF COVER SHEET

Use this section to specify requirements for gravel armour placement. This section is primarily applicable to canal rehabilitation projects undertaken during the non-irrigation (winter) season.

Edit this section to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	Quality Control	
1.2	Quality Assurance	
	.4	Confirm the frequency of gradation testing. Generally at least 1 test per 1000 m^3 has been used on contracts where large quantities of gravel armour are required.
Part 2	Products	
2.1	Materials	
Part 3	Execution	
3.1	Stockpiles	
3.2	Placement	
	[.5]	Include if required.
3.3	Placement Tolerances	
	[.1 & .2]	Include the appropriate clauses to suit the subgrade material and the Contract requirements. Clause 3.3.1 is based on a 200 mm design thickness of gravel armour, and clause 3.3.2 on a 300 mm design thickness normally used on PVC membrane liners.
	.3	Clearly specify the top of armour elevations on the Drawings. Edit as required.

END OF COVER SHEET

Use this section to specify requirements for riprap placement on geotextile. Where riprap and riprap bedding placement are required, use Section 02373 – Riprap and Riprap Bedding Placement.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Quality Control	
1.2	Quality Assurance	
	.3.1	Size of riprap sample indicated is based on the capacity of a typical tandem truck.
	.3.2	Confirm the frequency of calibrating the weigh scale.
	.3.5	Confirm the frequency of riprap gradation testing. Generally at least 1 test per 2000 m^3 has been used on contracts where large quantities of riprap are required.
Part 2	Products	
2.1	Materials	
	.2	Edit as required.
Part 3	Execution	
3.1	Stockpiles	
3.2	Placement	
3.3	Placement Tolerances	
	.1	Clearly specify the riprap thickness on the Drawings.
	.2	Clearly specify the design top of riprap elevations on the Drawings.

END OVER COVER SHEET

Use this section to specify requirements for riprap and riprap bedding placement. Where riprap is placed directly on geotextile, use Section 02373 – Riprap Placement.

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 Quality Control	
1.2 Quality Assurance	
.3.1	Size of riprap sample indicated is based on the capacity of a typical tandem truck.
.3.2	Confirm the frequency of calibrating the weigh scale.
.3.5	Confirm the frequency of riprap gradation testing. Generally at least 1 test per 2000 m^3 has been used on contracts where large quantities of riprap are required.
Part 2 Products	
2.1 Materials	
.2	Edit riprap types as required.
.3	Edit riprap bedding types as required.
Part 3 Execution	
3.1 Stockpiles	
3.2 Placement	
3.3 Placement Tolerances	
.1	Clearly specify the riprap thickness and design top of riprap elevations on the Drawings.
.2	Clearly specify the riprap bedding thickness and design

Heading of Specification Text	Specification Note
	top of riprap bedding elevations on the Drawings.

END OF COVER SHEET

Use this section to specify requirements for gabion baskets and/or mats.

Edit this section to suit the Contract Requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Detail Drawings	Ensure that the correct detail drawing is attached to this section.
1.2	References	
	[.2.3 to .2.9]	Include if PVC Coating is required. Co-ordinate with clauses 2.1.2.4 and 2.1.3.4.
	[.3.1]	Include if required to suit clause 3.4.2.
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	Specify the configuration of the structure and the size of the gabions on the Drawings. Do not duplicate the wire sizes on the Drawings.
	[.2]	Include if gabion baskets are required.
	[.3]	Include if gabion mats are required.
	[.4]	Include if PVC coating is required. Edit as required for the gabion baskets and/or mats and co-ordinate with clauses 1.2.2.3 to 1.2.2.9.
	[.7]	Include if required, and co-ordinate with clause 3.1.4.
	[.8]	Include if required, and co-ordinate with clause 3.4.
Part 3	Execution	

Heading of Specification Text		Specification Note
3.1	Preparation	
	[.4]	Include if required, and co-ordinate with clause 2.1.7.
3.2	Assembly and Installation	
3.3	Filling	
[3.4]	Concrete Cap	Include if required, and co-ordinate with clause 2.1.8.
	.2	Reference applicable Cast-in-Place Concrete section if used; however, if the concrete cap is the only concrete item in the Contract, consider referencing CAN/CSA-A23.1 and adding any specific requirements for placing, consolidating, curing, protecting, and finishing.

END OF COVER SHEET

Use this section to specify requirements for Polyvinyl Chloride lining of canals.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	References	
	[.2.11]	Co-ordinate with clause 3.2.8 and include if required.
1.2	Submittals	
	.2.1	Include the contact information and address of the Minister's testing laboratory.
	.2.3	Edit as required.
1.3	Quality Control	
1.4	Quality Assurance	
1.5	Delivery, Storage, and Handling	
Part 2	Products	
2.1	PVC Lining – General	
2.2	Physical Properties	The specified physical properties should be reviewed with PVC liner manufacturers and confirmed by the designer.
2.3	Identification	
2.4	Manufactured Sheeting	
2.5	Fabricated Lining	
	[.5]	Include and edit as required.
	[.6]	Include and edit as required.

Heading of Specification Text		Specification Note
Part 3	Execution	
3.1	Preparation	If required, specify sand bedding to protect the lining from puncture.
3.2	Installation	
	.6	Edit as required.
	.7	Edit as required.
	[.8]	Include if required. Co-ordinate with clause 1.1.2.11

END OF COVER SHEET

Use this section to specify requirements for timber piling. In general, this section was developed using Alberta Transportation's document entitled Specifications for Bridge Construction. Therefore, it should be reviewed and modified as needed to suit the particular installation and structure requirements. More specifically, this section is based on installing the piles to a specified minimum tip elevation only, rather than to a minimum tip elevation and ultimate pile capacity. Where a minimum ultimate pile capacity is specified, the formula and other criteria that will be used by the Minister to determine the actual ultimate pile capacity must be provided.

The need to perform pile load testing, including the testing procedure, and frequency of testing, should be reviewed by the designer. Only static axial compression load testing has been incorporated.

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Part 1	
1.1	
	Include if load testing as per clause 1.3.3 is specified.
1.2	
	Include if load testing as per clause 1.3.3 is specified.
1.3	
	Edit as required. Include and edit if static axial load testing is required. Specify the number and location of test piles on the Drawings. Review the 7 test methods covered in ASTM D1143, and confirm the test procedure required. Specify any other specific testing requirements.
1.4	
	Edit as required. Specify the criteria that will be used for determining the ultimate load capacity.

Heading of Specification Text	Specification Note
1.5	
Part 2	
2.1	
	Include the pile design load if testing as per clause 1.3.3 is specified.
Part 3	
3.1	
	Edit as required.
3.2	
	Edit as required.
3.3	
	Edit as required.
3.4	

END OF COVER SHEET

Use this section to specify requirements for steel H-piling. In general, this section was developed using Alberta Transportation's document entitled Specifications for Bridge Construction. Therefore, it should be reviewed and modified as needed to suit the particular installation and structure requirements. More specifically, this section is based on driving the piles to refusal, a specified minimum tip elevation, or an ultimate pile capacity. Where a minimum ultimate pile capacity is specified, the formula and other criteria that will be used by the Minister to determine the ultimate pile capacity attained for a particular pile installation must be provided.

The need to perform to pile load testing, including the testing procedure, and frequency of testing, should be reviewed by the designer. Only static axial compression load testing has been incorporated, therefore modifications will be required if dynamic, pull out, or lateral load testing is required.

Edit this section as required to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Definitions	
	.1	Edit as required and co-ordinate with clause 3.1.1.
	[.2]	Include and edit as required. Co-ordinate with clause 2.1.2 and clauses 1.5.3, 3.2.2, and 3.2.5 to 3.2.7.
1.2	References	
	[.2.5]	Include if load testing as per clause 1.4.3 is required.
1.3	Submittals	
	[.6] & [.7]	Include as required.
1.4	Quality Control	
	.1	Edit as required.
	[.3]	Include if static axial load testing is required. Specify the number and location of test piles on the Drawings. Review the 7 test methods covered in ASTM D1143, and confirm the test procedure required. Specify any other specific testing requirements.

Heading of Specification Text		Specification Note
1.5	Quality Assurance	
	[.3]	Provide appropriate criteria for determining the ultimate pile capacity.
1.6	Delivery, Storage, and Handling	
	.2	Edit as required.
Part 2	Products	
2.1	Materials	
	[.2]	Include as required and co-ordinate with clause 1.1.2.
	.4	Edit as required.
	[.5]	Include if required and co-ordinate with clause 3.4.2.
2.2	Fabrication	
Part 3	Execution	
3.1	Pile Driving Equipment	
	.1	Co-ordinate with clause 1.1.1 and edit as required
3.2	Installation	
	.1, .2, .5, .6, & .7	Edit as required.
3.3	Installation Tolerances	
	.1, .2, & .3	Edit as required.
3.4	Repair of Damaged or Improperly Installed Piles	
	[.2]	Include if required, and co-ordinate with clause 2.1.5.

END OF COVER SHEET

Use this section to specify requirements for steel sheet piling. This section is intended for contracts requiring seepage cutoff walls and small retaining walls where tieback anchors or other supports and special access for provisions for installation are not required.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	References	
1.2	Submittals	
	.2 & .3	Edit as required.
1.3	Quality Control	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.2.1 & .2.2	Edit as required.
2.2	Shop Fabrication	
	[.1]	Include and co-ordinate with clause 3.2.3 where piles will be driven in pairs. This approach is used in order to transfer the driving energy to the concentrated mass of the interlocks instead of the thin web. Confirm fabrication with manufacturers.
	[.3]	Include and edit as required. Co-ordinate with clause 3.4.2
Part 3	Execution	
3.1	Preparation	
	.3	Edit as required.

Heading of Specification Text		Specification Note
3.2	Installation	
	[.3]	Include as required. Co-ordinate with clause 2.2.1.
3.3	Installation Tolerances	
	.1, .2, & .3	Edit as required.
3.4	Repair of Damaged or Improperly Installed Sheet Piles.	
	[.2]	Include as required.

END OF COVER SHEET

Use this section to specify requirements for galvanized corrugated steel pipe (CSP).

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 [Detail Drawings]	Provide detail drawings showing typical installation or details where appropriate. Include detail drawings, TRANS CB6-5.15 M1 and CB6-5.15 M2, showing requirements for sloped end sections where required.
1.2 References	
1.3 Submittals	
1.4 Delivery, Storage, and Handling	
Part 2 Products	
2.1 Materials	
.2.1	Edit for corrugation profile as required.
.2.2	Review wall thickness and diameter required in conjunction with the corrugation profile in clause 2.1.2.1.
[.2.3]	Include where sloped end sections are required.
.3.1	Confirm and modify wall thickness for couplers. Typically manufactured in 1.6 and 2.0 mm thickness. Use greatest thickness available.
.4	Confirm the thickness of the zinc coating required. Alberta Infrastructure and Transportation's "Specifications for Bridge Construction" provides for specifying either thickness. A thickness of 610 g/m^2 is the standard specified in CSA-G401, therefore where 1220 g/m^2 is required, review the availability and delivery with CSP manufacturers.

Heading of Specification Text		Specification Note
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation	
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
	.5	Clearly show the bedding requirements (backfill materials, thickness, and dimensions) on the Drawings.
	[.6]	Include if preshaping of the bed is required.
	[.7]	Include if a camber is required.
3.2	Installation	
3.3	Fill and Backfill	
3.4	Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for pipe and structures (i.e. such as manholes, gatewells, pumpwells, etc.) fabricated from galvanized corrugated steel pipe.

For other items typically required with such structures, such as ladders, access hatches, etc., use Section 05505 – Metal Fabrications to specify requirements, particularly where these items are required elsewhere. Carefully co-ordinate measurement and payment between the sections.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	[Detail Drawings]	Provide detail drawings showing typical installations or details where appropriate. Include detail drawings, TRANS CB6-5.15 M1 and CB6-5.15 M2, showing requirements for sloped end sections where required.
1.2	References	
1.3	Submittals	
	.2	Edit as required.
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.2.1	Edit corrugation profile as required.
	.2.2	Review wall thickness and diameter required in conjunction with corrugation profile in clause 2.1.2.1.
	[.2.3]	Include where sloped end sections are required.
	.3.1	Confirm and modify wall thickness for couplers. Typically manufactured in 1.6 and 2.0 mm thickness. Use greatest thickness available.
	[.5]	Include if fiberglass lids are required. For fabricated steel lids, provide details on the Drawings and co-

Heading of Specification Text		Specification Note
		ordinate with Section 05505 – Metal Fabrications, if used.
	[.6]	Confirm ladder requirements. Co-ordinate with Section 05505 – Metal Fabrications, if used.
2.2	Shop Fabrication	Use this clause to specify shop fabrication requirements such as welding.
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation	
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
	.5	Clearly show the bedding requirements (backfill materials, thickness, and dimensions) on the Drawings.
	[.6]	Include if preshaping of the pipe bed is required.
3.2	Installation	
3.3	Fill and Backfill	
3.4	Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for galvanized structural plate corrugated steel pipe (SPCSP) structures. This section primarily relates to circular shapes therefore review and modifications may be required for other shapes (i.e. arches, ellipses, etc.). This section does not apply to super span or low-profile composite (i.e. SPCSP and concrete roof slab) structures.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	[Detail Drawings]	Include the detail drawing at the end of this section in cases where 2H:1V sloped end sections are required.
1.2	References	
1.3	Submittals	
1.4	[Quality Assurance]	Include if plant inspections are required during manufacture.
1.5	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.2.2	Edit as required.
	.2.4	Confirm the thickness of the zinc coating required. Alberta Transportation's "Specifications for Bridge Construction" provides for specifying either thickness. A thickness of 610 g/m^2 is the standard specified in CSA-G401, therefore, where 1220 g/m^2 is required, review availability and delivery with SPCSP manufacturers.
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation	

Heading of Specification Text		Specification Note
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
	.5	Clearly show the bedding requirements (backfill materials, thickness, and dimensions) on the Drawings.
	[.7]	Include if a camber is required.
3.2	Installation	
3.3	Fill and Backfill	
3.4	Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for precast concrete manholes.

For items typically required for manholes such as ladders, access hatches, etc., consider using Section 05505 – Metal Fabrications to specify requirements, particularly where these items are required elsewhere. Carefully co-ordinate measurement and payment between the sections.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	References	
	[.2.2]	Include if cast-iron frames and covers are used.
1.2	Submittals	
	.2	Edit as required.
1.3	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.4	Review if rungs as specified are acceptable for the application or if a ladder is required. Co-ordinate with Section 05505 – Metal Fabrications, if provided.
	[.5 & .6]	Confirm manhole access requirements (i.e. access hatch or manhole cover and frame). Co-ordinate with Section 05505 – Metal Fabrications, if provided.
	[.7]	In general, Kor-N-Seal connectors are available for pipes with O.D. less than 536 mm and should be confirmed with the supplier. Where connectors are not available or suitable, pipes may have to be grouted. Co-ordinate with clause 3.2.3.
	[.8]	Confirm requirement for grouting at pipe penetrations. Co-ordinate with clause 3.2.4.

Heading of Specification Text		Specification Note
2.2	Shop Fabrication	
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation	
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
3.2	Installation	
	[.3]	Co-ordinate with clause 2.1.7.
	[.4]	Co-ordinate with clause 2.1.8.

END OF COVER SHEET

Use this section to specify requirements for Polyvinyl Chloride (PVC) drain pipe including slotted drain pipe used for providing drainage beneath and adjacent to structures.

Edit this section to suit the Contract requirements.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 References	
1.2 Delivery, Storage, and Handling	
Part 2 Products	
2.1 Materials	
.2.1	Confirm that the pipe DR and stiffness are appropriate for the installation and bedding conditions, depth of cover, and equipment loads expected.
[.2.4]	Include if perforated pipe is required. Confirm number and orientation of row, diameter or size of slots, and drainage area. Co-ordinate with clause 3.2.7.
[.3]	Include if geotextile sock is required.
Part 3 Execution	
3.1 Excavation and Preparation of the Foundation	
.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid

Heading of Specification Text	Specification Note
	for under an unforeseen work allowance may be required. Edit as required.
3.2 Installation	
[.7]	Include if perforated pipe is required. Modify to suit the number and orientation of the perforations. Co-ordinate with clause 2.1.2.4.
3.3 Fill and Backfill	
3.4 Installation Tolerances	

END OF COVER SHEET

Use this section to specify requirements for Polyvinyl Chloride (PVC) pressure pipe for non-potable water systems (i.e. irrigation systems).

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	References	
	[.3.1 & .3.2]	Include as required.
1.2	Submittals	
1.3	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.2.1	Confirm that the pipe DR is appropriate for the installation and bedding conditions, pressure including surge pressure, depth of cover, and equipment loads expected. Confirm which AWWA standard is applicable and co-ordinate with clause 1.1.
	.3	Include and co-ordinate with Section 03300/03305 – Cast-in-Place Concrete, if required.
	[.5]	Include if required, and co-ordinate with clause 3.3.6.
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation	
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in

Heading of Specification Text		Specification Note
		the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
3.2	Installation	
	.7	Include details of thrust blocks on the Drawings.
3.3	Fill and Backfill	
	[.6]	Include if required, and co-ordinate with clause 2.1.5.
3.4	Installation Tolerances	
3.5	Hydrostatic Testing	
	.1	Hydrostatic testing can be performed on a section of or the entire pipeline depending on its length. Generally, the pipe should be completely backfilled prior to hydrostatic testing. This ensures that any pipe movements due to the design soil loading have been allowed to occur, minimizes the extent of pipe and excavation that is exposed, and supports the pipe during testing. However, it makes locating and repairing leaks more difficult. The merits of permitting hydrostatic testing to occur after a specified amount of backfill is in place (i.e. partially backfilled) must be carefully reviewed by the designer, and specified accordingly.
	.4, & .8	Edit as required.

END OF COVER SHEET

Use this section to specify requirements for precast concrete pipe for gravity and low-head pressure applications.

Edit this section to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	References	
1.2	Submittals	
	[.2]	Use this clause when a modified or special pipe design is specified in clause 2.1.2.
1.3	Quality Control	
	.1.3 & .1.4	Confirm number/frequency of hydrostatic testing that is required.
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	[.2.1 & 2.2]	Choose the appropriate ASTM C361 strength class based on actual installation conditions (positive embankment, negative embankment, and trench), bedding conditions; unit weight of backfill and height of cover; vehicle and equipment loads; and hydrostatic head. ASTM C361 does permit modified or special pipe design for installation and/or loading conditions that vary or are more severe than covered in Table 1. For modified or specially designed pipe, use clause 2.1.2.2 and revise as necessary. Except at connections between the pipe and a structure, concrete bedding on yielding foundations should not be used because of concerns that shearing of the pipe could occur due to differential movements.

Heading of Specification Text		Specification Note
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation	
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
3.2	Installation	
	.8	Edit as required. Manufactured sulphate-resistant cementitous grout could also be used.
3.3	Fill and Backfill	
	.1, .2, .6, .7 & .9	Modify these clauses as required if cast-in-place concrete bedding is used.
3.4	Installation Tolerances	
[3.5]	Field Testing	Review and determine if field testing of pipe joints, to verify the integrity of the joints and the installation procedures being used, is required. Contact the concrete pipe suppliers in the vicinity of the project to determine if air-testing equipment is available. Useful information on joint testing can be obtained from ASTM C1103 – Standard Practice for Joint Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines.

END OF COVER SHEET

Use this section to specify requirements for steel syphons. This section is based on small syphon pipes (300 mm diameter or less) that have typically been used as low-side turnouts on irrigation canals.

Carefully co-ordinate this section with Section 05505 – Metal Fabrications if used, particularly where they include similar items. Close attention to the scope, measurement and payment clauses in Section 01280 – Measurement Schedule is required, particularly in cases where the metal fabrications specified in this section are being paid for under a Lump Sum, and metal fabrications in Section 05505 – Metal Fabrications are being paid under a Unit Price per kilogram.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	References	
1.2	Submittals	
1.3	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.2.3	Edit as required.
	.3.1 to .3.3	Edit as required.
	.4.1 to .4.3	Edit as required.
	.5	Indicate CSP diameter and wall thickness on the Drawings.
	.6	Edit as required. Provide details of metal work items on the Drawings.
	.7	Confirm type of lid and edit as required.
	.8	Edit as required.
2.2	Shop Fabrication	

Heading of Specification Text		Specification Note
	.6.1 to .6.3	Confirm design requirements and edit as required.
Part 3	Execution	
3.1	Excavation and Preparation of the Foundation.	
	.3	For excavation required by the Minister beyond the specified lines, grades, slopes, and elevations, the preference is that this excavation be classified by the Minister and measured and paid for under the applicable Unit Price. The use of the term, Authorized Over-Excavation, should be avoided so that the conditions in the Contract authorizing Changes in the Work are not compromised. However, for canal rehabilitation contracts, Structure Excavation is typically included in the Lump Sum price of the structure. In this case the inclusion of Authorized Structure Over-Excavation paid for under an unforeseen work allowance may be required. Edit as required.
3.2	Installation	
	.3	Edit as required and show the location of the anode on the Drawings.
3.3	Fill and Backfill	
3.4	Field Testing	
	.1	Edit as required.
3.5	Installation Tolerances	
3.6	Repair of Damaged Coating	

END OF COVER SHEET

Use this section to specify requirements for chain link fencing set into the ground or anchored to concrete structures.

Carefully co-ordinate this section with Section 05505 – Metal Fabrications if used, particularly where they include similar items. Close attention to the scope, measurement and payment clauses in Section 01280 – Measurement Schedule is required, particularly in cases where the metal fabrications specified in this section are being paid for under a Lump Sum or Unit Price per metre of fencing, and metal fabrications in Section 05505 – Metal Fabrications are being paid under a Unit Price per kilogram.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Detail Drawings	Ensure the correct detail drawing is attached to this section. Attach as a ".pdf" file.
1.2	References	
	[.2]	Include if barbed wire is required.
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	[.3.2]	Edit as required.
	[.4]	Include if barbed wire is required, and co-ordinate with clauses – 2.1.3.2 and 3.1.13
	[.5]	Include if gates are required and co-ordinate with clause 2.1.5.2 and 3.4.
	[.6]	Include if required and co-ordinate with Section 03300/03305 – Cast-in-Place Concrete.
	[.7]	Include, edit, and co-ordinate with clause 2.2 and 3.3,

Heading of Specification Text		Specification Note
		and Section 03151 – Concrete Accessories, if required,
[2.2]	[Shop Fabrication]	Include if required and co-ordinate with clause 2.1.7 and 3.3.
Part 3	Execution	
3.1	Installation	
	.1, .2, & .10	Edit as required.
	[.13]	Include if required, and co-ordinate with clause 2.1.4.
	[.14]	Include if electrical grounding of fencing is required.
3.2	[Installation in the Ground]	Include if required and co-ordinate with clause 2.1.6.
3.3	[Installation on Concrete Structures]	Include if required and co-ordinate with clause 2.1.7 and clause 2.2.
3.4	[Installation of Double Gates]	Include if double gates are required. Provide gate stop details on the Drawings.
3.5	Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for barbed wire fencing.

Edit this section to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	Detail Drawings	Ensure the correct detail drawing is attached to this section.
1.2	References	
Part 2	Products	
2.1	Materials	
Part 3	Execution	
3.1	[Demolition of Existing Fences]	Include this clause where required.
	.1	Edit this clause and co-ordinate with Section 02220 – Demolition, Salvage, and Removal, as required.
3.2	Grading	
3.3	Installation	

END OF COVER SHEET

Use this section to specify requirements for vehicle access control gates.

Carefully co-ordinate this section with Section 05505 – Metal Fabrications if used, particularly where they include similar items. Close attention to the scope, measurement and payment clause in Section 01280 – Measurement Schedule is required, particularly in cases where the metal fabrications specified in this section are being paid for under a Lump Sum or Unit Price per number, and metal fabrications in Section 05505 – Metal Fabrications are being paid under a Unit Price per kilogram.

Edit this section as required to suit the Contract requirements.

Heading of Specification Text		Specification Note
Part 1	General	
1.1	Detail Drawings	Ensure the correct detail drawing is attached to this section.
1.2	References	
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	.5	Co-ordinate with Section 03300/03305 – Cast-in-Place Concrete as required.
2.2	Shop Fabrication	
Part 3	Execution	
3.1	Installation	
3.2	Repair of Damaged Coatings	

END OF COVER SHEET

Use this section to specify requirements for livestock guards.

Carefully co-ordinate this section with Section 05505 – Metal Fabrications, if used, and particularly when both sections include similar items. Close attention to the scope, measurement, and payment clause in Section 01280 – Measurement Schedule is required, particularly in cases where the metal fabrications specified in this section are being paid for under a Lump Sum or Unit Price per number, and metal fabrications in Section 05505 – Metal Fabrications are being paid under a Unit Price per kilogram.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Detail Drawings	Attach the appropriate detail drawing to the end of this section. Refer to Alberta Transportation Drawing CB6 2.13 M5, M6, M7 and M8 for various types. Where required, verify that the structural members are adequate for the design vehicle loads and span.
1.2	References	
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
2.2	Shop Fabrication	
Part 3	Execution	
3.1	Installation	
3.2	Repair of Damaged Coating	

END OF COVER SHEET

Use this section to specify requirements for W-Beam guardrail.

Also refer to Alberta Transportation's "Standard Specifications for Highway Construction" and "Standard Drawings for Highway Construction".

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Detail Drawings	Refer to Alberta Transportation's manual entitled "Standard Drawings for Highway Construction" to obtain typical details for the design and construction of W-Beam guardrails. Ensure the correct detail drawings are attached to this section.
1.2	References	
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	Refer to Alberta Transportation's document entitled "Standard Specifications for Highway Construction" for information on material specifications.
Part 3	Execution	
3.1	Installation	
3.2	Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for box-beam guardrail.

Also refer to Alberta Transportation's "Standard Specifications for Highway Construction" and "Standard Drawings for Highway Construction".

Carefully co-ordinate this section with Section 05505 – Metal Fabrications, if used, and particularly when both sections include similar items. Close attention to the scope, measurement, and payment clause in Section 01280 – Measurement Schedule is required, particularly in cases where the metal fabrications specified in this section are being paid for under a Lump Sum or Unit Price per metre, and metal fabrications in Section 05505 – Metal Fabrications are being paid under a Unit Price per kilogram.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Detail Drawings	Refer to Alberta Transportation's manual entitled "Standard Drawings for Highway Construction" to obtain typical details for the design and construction of box-beam guardrails. Ensure the correct detail drawings are appended to this section.
1.2	References	
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	Refer to Alberta Transportation's document entitled "Standard Specifications for Highway Construction" for information on material specifications.
	.8	Co-ordinate with Section 03300/03305 – Cast-in-Place Concrete, if required.
2.2	Shop Fabrication of Steel Components	

Heading of Specification Text	Specification Note
Part 3 Execution	
3.1 Installation	
3.2 Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for a cable barrier.

Also refer to Alberta Transportation's "Standard Specifications for Highway Construction" and "Standard Drawings for Highway Construction".

Carefully co-ordinate this section with Section 05505 – Metal Fabrications, if used, and particularly when both sections include similar items. Close attention to the scope, measurement, and payment clauses in Section 01280 – Measurement Schedule is required, particularly in cases where the metal fabrications specified in this section are being paid for under a Lump Sum or Unit Price per metre, and metal fabrications in Section 05505 – Metal Fabrications are being paid under a Unit Price per kilogram.

Edit this section to suit the Contract requirements.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Detail Drawings	Refer to Alberta Transportation's manual entitled "Standard Drawings for Highway Construction" to obtain typical details for the design and construction of cable barriers. Ensure the proper detail drawings are attached to this section.
1.2	References	
1.3	Submittals	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	Refer to Alberta Transportation's document entitled "Standard Specifications for Highway Construction" for information on material specifications.
	.10	Co-ordinate with Section 03300/03305 – Cast-in-Place Concrete, if required.
Part 3	Execution	
3.1	Installation - General	

Heading of Specification Text	Specification Note
3.2 Standard Posts	
3.3 Anchor Posts	
3.4 Repair of Damaged Galvanized Coating	

END OF COVER SHEET

Use this section to specify requirements for Topsoil and Subsoil placement.

This section is modified for compatibility with Standard Specifications for Highway Construction clause 2.20 – Seeding, revised 20050722, the Special Provisions SPC-G039, and the Design Bulletin No. 25 "Grass Seed Mixtures Used on Highway and Bridge Projects" affecting 5 sections of the current CWMS as follows:

2 primary sections:

02923 – Drill Seeding
02924 – Hydroseeding

3 secondary sections:

01280 – Measurement and Payment
02910 – Topsoil and Subsoil Placement
02930 – Soil Erosion Protection

Review the latest editions of Standard Specifications for Highway Construction clause 2.20 – Seeding, the Special Provisions SPC-G039, and the Design Bulletin No. 25 "Grass Seed Mixtures Used on Highway and Bridge Projects.

Review the latest edition of the Field Guide for Erosion and Sediment Control, Part II, Best Management Practices (BMP) Details - #34 (a-c) Government of Alberta – Transportation at www.transportation.alberta.ca

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	Extent of Topsoil and Subsoil Placement	
	[.3]	Use this clause only where measurement and payment is by area (i.e. Unit Price per square metre).
1.2	References	
	[3.2]	Include where a Post-Disturbance Reclamation Criteria and Assessment is specified.

Heading of Specification Text		Specification Note
1.3	Submittals	
	[.2]	Include if a post-disturbance assessment report by the Contractor is specified. Co-ordinate with clause 1.5.
[1.4]	[Initial Post-Disturbance Assessment by the Minister]	
[1.5]	[Post-Disturbance Assessment by the Contractor]	
[1.6]	[Minister Supplied Materials]	Include this clause where previously (e.g. under an earlier contract) stockpiled Topsoil and Subsoil is to be placed.
Part 2	Products	
2.1	Materials	
	.2	Co-ordinate with clause 1.6, and edit as required.
	.3	Co-ordinate with clause 1.6, and edit as required.
Part 3	Execution	
3.1	Preparation	
3.2	Subsoil Placement [in Borrow Areas]	
3.3	Subgrade Preparation Prior to Topsoil Placement	
	.3 & .5	Edit as required. The 70 mm is consistent with Alberta Transportation's Highway Specifications
3.4	Topsoil Placement	
	.5	Edit as required. The 70 mm is consistent with Alberta Transportation's Highway Specifications
3.5	Finish Grading (Surface Preparation) Prior to Seeding	

Heading of Specification Text		Specification Note
3.6	Surface Tracking Prior to Hydroseeding	Note similar specifications are used in Section 02923 – Drill Seeding, the clause on broadcast seeding. Ensure correct co-ordination.
3.7	Clean-up	
	.2	Edit as required.

END OF COVER SHEET

Use this section to specify requirements for drill seeding. Drill seed all disturbed areas, 3H:1V or flatter, that are located within the Site limits. The seeding may also be carried out through a separate contract (including a highway maintenance contract) when climate conditions are more conducive to the seeding and grass growth. Discuss the timing and contractual requirements with Alberta Transportation.

The designer should:

.1 Perform a vegetation assessment of the Site and border between the Site limits and adjacent properties to determine the presence of native plant communities, and to determine the limits for reseeding with either native seed mixture or agronomic seed mixtures.

.2 For canals, where reseeding with agronomic seed mixtures is appropriate, obtain a minimum of one Topsoil sample per kilometer and where there are distinctive soil type changes and perform Topsoil analysis. An uninterrupted length is defined as a portion of the right of way with consistent soil types, and no geographical obstacles such as watercourses or major intersections. Each Topsoil sample should be tested to determine the appropriate fertilizer composition and application rate. For projects other than canals, provide a recommendation to Alberta Transportation for appropriate Topsoil analysis.

This section was modified for compatibility with Standard Specifications for Highway Construction clause 2.20 Seeding (December 2010) Design Bulletin No. 25 “Grass Seed Mixtures Used on Highway and Bridge Projects” (revised 2005-10-26) including Special Provisions SPC-G039 and B.M.P #22 – Seeding Erosion Control (June 2011) that were available at the time. This affected 5 sections of the current CWMS as follows:

2 primary sections:

02923 – Drill Seeding
02924 – Hydroseeding

3 secondary sections:

01280 – Measurement and Payment
02910 – Topsoil and Subsoil Placement
02930 – Soil Erosion Protection

CONFIRM SEED MIXTURE ZONES WITH LATEST EDITIONS OF DESIGN BULLETIN NO. 25 SEED MIXTURES USED ON HIGHWAY AND BRIDGE PROJECTS INCLUDING SPECIAL PROVISIONS SPC-G039. CONFIRM WITH LATEST REVISION.

Edit this section to suit the Contract requirements.

If the seeding, maintenance, and acceptance time of this work cannot be carried out due to cold or frozen conditions, consider excluding this work from the prerequisites for Substantial Performance of the Work, and include it as a prerequisite for Total Performance of the Work. Specify a date for completion of drill seeding in Section 01110 – Summary of Work.

Edit the specification text of Section 01110 – Summary of Work and Section 01775 – Contract Acceptance Procedures accordingly.

In cases where erosion control systems are required to protect drill seeded areas from erosion, use Section 02930 – Soil Erosion Protection. The section includes additional mulch and tackifier specifications for use over drill seeding when required. Ensure requirements are co-ordinated in the Measurement Schedule –Section 01280.

Heading of Specification Text		**Specification Note**
Part 1	General	
1.1	References	
1.2	Submittals	
1.3	Quality Control	
1.4	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	[.2.3, .2.4, $ .2.5]	Modify seed composition as required to suit the Site location. Refer to map of Seed Mix Zones for recommended native and agronomic seed mixes based on Alberta Transportation's Design Bulletin No. 25 including SPC-G039 and update table as required.

Heading of Specification Text	Specification Note
	Delete either composition type agronomic or native seed when that seed is **not** used in the work. Delete cover crop if not required and coordinate with clause 3.4.3. For example, a cover crop may not be required where it may outcompete a native sees mix in the next growing season. This could be a judgment call related to the time of year and the erosion potential of the soil.
[.3]	Include if fertilizer is required based on Topsoil analysis including for native seed mixes. Modify its composition as required to suit the seed mixture and soil conditions. Coordinate with clauses 3.4, 3.5.3, 3.7.2, and 3.9.3.
Part 3 Execution	
3.1 Preparation	
3.2 Notification of Commencement	
3.3 Weather Conditions	
3.4 Application	
[.3 .2]	Include fertilizer application rate as recommended from Topsoil analysis.
[.3.3]	Include and edit as required.
[.5.5]	Include if required.
[.6]	Include if required.
[.9]	Include if Section 02930 – Soil Erosion Protection is provided.
3.5 Broadcast Seeding	
3.6 Surface Tracking	
3.7 Watering	
.1	Since the scope of work including performance

Heading of Specification Text		Specification Note
		requirements for watering cannot be clearly defined, it will valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.
	.2	Edit as required.
3.8	Reseeding	
	.3	Edit as required.
	[.4]	Include if applicable. This clause is provided to define the work so that the bidders can price accordingly.
3.9	Adverse Vegetation Control	Coordinate with Section 01392 – Environmental Management.

END OF COVER SHEET

Use this section to specify requirements for hydroseeding when areas are steeper than 3H:1V or inaccessible for drill seeding. Seed all disturbed areas located within the Site limits. The seeding may also be carried out through a separate contract (including a highway maintenance contract) when climate conditions are more conducive to the seeding and grass growth. Discuss the timing and contractual requirements with Alberta Transportation.

The designer should:

.1 Perform a vegetation assessment of the right of way and adjacent properties to determine the presence of native plant communities, and to determine the limits for reseeding with either native seed mixture or agronomic seed mixtures.

.2 For canals, where reseeding with agronomic seed mixtures is appropriate, obtain a minimum of one sample per kilometer and where there are distinctive soil type changes and perform Topsoil analysis. An uninterrupted length is defined as a portion of the right of way with consistent soil types, and no geographical obstacles such as watercourses or major intersections. Each Topsoil sample should be tested to determine the appropriate fertilizer composition and application rate. For projects other than canals, provide a recommendation to Alberta Transportation for appropriate Topsoil analysis.

This section was modified for compatibility with Standard Specifications for Highway Construction clause 2.20 Seeding (December 2010), Design Bulletin No. 25 “Grass Seed Mixtures Used on Highway and Bridge Projects” (revised 2005-10-26) including Special Provisions SPC-G039 and B.M.P #22 – Seeding Erosion Control (June 2011) that were available at the time. This affected 5 sections of the current CWMS as follows:

2 primary sections:

02923 – Drill Seeding
02924 – Hydroseeding

3 secondary sections:

01280 – Measurement and Payment
02910 – Topsoil and Subsoil Placement
02930 – Soil Erosion Protection

Edit this section to suit the Contract requirements.

If the seeding, maintenance, and acceptance time of this work cannot be carried out due to cold or frozen conditions, consider excluding this work from the prerequisites for Substantial Performance of the Work and include it as a prerequisite for Total Performance of the Work. Specify a date for completion of hydroseeding in Section 01110 – Summary of Work.

Edit the specification text of Section 01110 – Summary of Work and Section 01775 – Contract Acceptance Procedures accordingly.

In cases where erosion control systems are required to protect hydroseeded areas from erosion use Section 02930 – Soil Erosion Protection. This section includes additional hydro-mulch and tackifier specifications for use over drill seeding or other purposes, when required. Ensure requirements are co-ordinated in the Measurement Schedule – Section 01280.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 References	
1.2 Submittals	
1.3 Delivery, Storage, and Handling	
Part 2 Products	
2.1 Materials	
.2	Modify seed composition as required to suit the Site location. Refer to map of Seed Mix Zones for recommended native and agronomic seed mixes based on Alberta Transportation's Design Bulletin No. 25 including SPG-G039 and update table as required. Delete either composition type agronomic or native seed when that seed is **not** used in the work. Delete cover crop if not required and coordinate with clause 3.4.3. For example, a cover crop may not be required where it may outcompete a native sees mix in the next growing season. This could be a judgment call related to the time of year and the erosion potential of the soil.

Heading of Specification Text		Specification Note
	[.3]	Include if fertilizer is required based on Topsoil analysis including for native seed mixes. Modify its composition as required to suit the seed mixture and soil conditions. Coordinate with clauses 3.4.3, 3.4.7, and 3.7.3
Part 3	Execution	
3.1	Preparation	
	.1	Coordinate with Section 02910 – Topsoil and Subsoil Placement.
3.2	Notification of Commencement	
3.3	Weather Conditions	
3.4	Application	
	.3.2	Include application rate as required.
	[.3.3]	Include fertilizer application rate as recommended from Topsoil analysis.
	[.3.4]	Include and edit as required.
	[.11]	Include if Section 02930 – Soil Erosion Protection is provided.
3.5	Protection	
3.6	Watering	Since the scope of work including performance requirements for watering cannot be clearly defined, it will valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.
	.1	Edit as required.
3.7	Reseeding	
	.3	Edit as required.
	[.4]	Include if applicable. This clause is provided to define the work so that the bidders can price accordingly.

Heading of Specification Text	Specification Note
3.8 Adverse Vegetation Control	Coordinate with Section 01392 – Environmental Management.

END OF COVER SHEET

Use this section to specify requirements for preventing soil erosion due to wind or water from temporary stockpiles or other work areas, and from permanent Topsoiled and seeded areas to allow the vegetative cover to become established. It includes fabric fences, mulch, straw crimping, blankets, mats, and geocomposites. Note that Surface Tracking, another erosion control technique related to Topsoil placement, is specified in Section 02910 – Topsoil and Subsoil Placement. Review the Design Guidelines for Erosion and Sediment Control, Alberta Transportation. Also refer to Alberta Transportation Products List for Erosion and Sediment Control Systems.

This section was modified for compatibility with Standard Specifications for Highway Construction clause 2.20 Seeding (December 2010), Design Bulletin No. 25 "Grass Seed Mixtures Used on Highway and Bridge Projects" (revised 2005-10-26) including Special Provisions SPC-G039 and B.M.P #22 – Seeding Erosion Control (June 2011) that were available at the time. This affected 5 sections of the current CWMS as follows:

2 primary sections:

02923 – Drill Seeding
02924 – Hydroseeding

3 secondary sections:

01280 – Measurement and Payment
02910 – Topsoil and Subsoil Placement
02930 – Soil Erosion Protection

Edit this section to suit the Contract requirements.

Carefully consider the method of measurement and the basis of payment for the variety of items and include in Section 01280 – Measurement Schedule. Consider the option of not measuring or paying as a separate item when soil erosion protection requirements are incidental to other work. In particular, carefully review the measurement and payment for Topsoil required for this section with the measurement and payment for Topsoil of Section 02910 – Topsoil and Subsoil Placement.

Heading of Specification Text	**Specification Note**
Part 1 General	
1.1 [References]	

Heading of Specification Text		Specification Note
	[.2]	Co-ordinate with clause 2.1 and include as required.
1.2	Submittals	
1.3	Delivery, Storage, and Handling	
Part 2	Products	
2.1	Materials	
	[.2 to .11]	Include and edit as required. Where products and manufacturers are specified, provide at least 3 choices where possible. Co-ordinate with clauses 1.1.2 and 3.2 to 3.8.
Part 3	Execution	Include and edit as required. Co-ordinate with clauses 2.2 to 2.11.
3.1	Installation - General	
[3.2]	[Silt Fence]	Coordinate with Section 01392 – Environmental Management.
[3.3]	[Crimping]	
[3.4]	[Hydro-Mulch and Tackifier]	When required with drill seeding, insert a cross reference in Section 02923 – Drill Seeding and inclusion in Section 01280 – Measurement and Payment.
[3.5]	[Fibre Blanket]	
[3.6]	[Fibre Mat]	
[3.7]	[Polyethylene Cell]	
[3.8]	[ ]	Add as required for other products.

END OF COVER SHEET