**ENGINEERING REPORT**

**HOLLAND MARSH DRAINAGE SYSTEM**
**CANAL IMPROVEMENT PROJECT**

**TOWN OF BRADFORD WEST-GWILLIMBURY**
**COUNTY OF SIMCOE**

**TOWNSHIP OF KING**
**REGION OF YORK**

# "SPECIFICATIONS"

# VOLUME 4

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K. SMART ASSOCIATES LIMITED
Kitchener Sudbury New Liskeard Rainy River

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**HOLLAND MARSH DRAINAGE SYSTEM**
**CANAL IMPROVEMENT PROJECT**

**PART I CONSTRUCTION SPECIAL PROVISIONS**

## A. CHANNEL WORK INCLUDING HAULING

### *A1 CLEARING (ITEMS 16 TO 19)*

*a) Along Route for Relocation of New Canal (Item 16)*

- This clearing is required in all intervals where a full or partial relocation of canal occurs.
- The aerials/extent of work drawings indicate the locations and the widths to be cleared.
- Where partial relocation occurs, the outside perimeter will be slightly curved as shown on the aerial.

- The Engineer will attend to layout by placing stakes at approximately 50 metre intervals. The Contractor will then be required to place the florescent ribbing spanning between the stakes to indicate the boundary. The Engineer will also attempt to highlight survey bars.

- Where the drawings show a 3m maintenance strip to be provided, the strip is not required to be cleared unless the extent of work notes specifically indicates such. However any trees/root masses which extend into the required limits of clearing from the maintenance strip are to be cleared. Also any dead or dying trees within the maintenance strip are to be removed.

- Two methods of clearing may be designated. The one method (Method 1) is to involve chipping/mulching all trees and branches to the original ground level and to leave as a graded mat. All brush regardless of size is to be chipped together with the trees. The Contractor shall propose the method he selects and such shall be pre-approved by the Engineer. Generally trees may be ground from the top down, may be felled and then ground by either excavator mounted grinders or by grinders that are self propelled or towed. The end result is that all branches and trunks are to be ground to an average particle size of 50mm unless approval is provided otherwise by the Engineer. The work is to be undertaken so that the chippings are confined to the working area which is the area between the edge of the canal and the delineated perimeter. Only chippings that fall in the canal or outside of the delineators and after use of normal care and operation by equipment, in the Engineer's opinion, will be allowed.

- The second method (Method 2) would involve partial grinding or mulching. In this approach, all trees 200mm or less in diameter and all branches, shrubs etc. would be ground or mulched as in the first method. However, larger trunks would be detached, cut into 6± metre lengths and left along the edge of the cleared area. Eventual use would be for corduroy roads, berm construction or disposal off site. These salvaged trunks would have to be felled and delimbed by chainsaws and so that they are cut flush to the ground.

- Where pre-approval is obtained from both the Engineer and the landowner, some trees may be fallen by chainsaw or other methods and then burned. Burning would only be allowed where permits are obtained in advance by the Contractor.
- Also where the Engineer and the adjacent landowner specifically allows, clearing may be undertaken by chainsawing and falling trees, delimbing where necessary and pushing into windrows beyond the 3m maintenance strip.

- An alternate method of removing or falling trees and excavating areas for burial outside of the maintenance strip would also only be allowed with pre-approval in writing by the Engineer and the landowner.
- Where fallen trees exist along the edge of the canal, these are to be pulled into the area to be cleared and are to be chipped, mulched, chainsawn or otherwise disposed of off site or in accordance with one of the other provisions where specified or where approval from the landowner or Engineer is obtained.
- Where a landowner wishes designated trees to be saved for marketable timber, the landowner is to place florescent ribbon or paint around such trees prior to entry onto the site for clearing by the contractor. If the Engineer agrees that such designated trees are marketable for timber the Contractor shall then chainsaw such at ground level, fall such trees, delimb such, cut such into 6m lengths or such greater lengths as directed by the Engineer and leave in the maintenance strip for the owner's salvage. After all clearing operations are completed, the Contractor is to move such fallen trees into one or more specific locations outside of the maintenance strip as directed/requested by the landowner and as approved by the Engineer.
- If the landowner and the Engineer cannot agree on which trees are marketable for timber, the Engineer shall have Forester Jack Winkler, or if he is not available, another qualified Forester to determine if the trees have marketable timber value. The Foresters decision will be final.
- Temporary culverts are required across all lateral channels during the clearing work. The work is described in C.S. Item A14)
- Since log bundles or root masses are to be created at 200m intervals along any portion of the canal that has a littoral shelf, as part of the clearing operation, the Contractor will be required to separately save 6 to 7 trees of 150 to 200mm dia. every 200 metres, delimb such, cut such into 3 to 4 metre lengths, place to reduce floating away and leave such along the perimeter of the new canal alignment within the maintenance strip so that such can be used for eventual lot bundles on the littoral shelf. Log bundles can also be created by inserting an inverted root mass into the littoral shelf and lashing only a few logs to it.
- Where the Contractor's decision is to use root masses only, and such are preferred to log bundles, then every 200± metres one trunk has to be left to a 1.2m± length so that when the root mass is inverted into the littoral shelf, the 1m trunk will be an anchor for the root mass.
- In some locations a complete felled tree may be used where approved as a replacement for the log bundle or root mass.
- The Contractor will be required to do one or the other every 200 metres where a shelf is built.
- Where grounds are too wet for a chipping/mulching operation that has been specified, the Engineer may approve the second method which allows the trees to be chain sawn and used as a corduroy type of road. These fallen trees are then to be disposed of in the outside of the backfilled canal berm when no longer required but in such a method as to not interfere with future irrigation lines or any other works that may be necessary to have unrestricted excavation.
- Where the Engineer requires additional clearing beyond the limits indicated on the drawings, either as a lateral or longitudinal extension of the area as shown, provided such is within 10% of the quantity for the work interval, the Contractor is to attend to such with proportionate additional payment.
- At all lateral channel locations, the Contractor is to leave a 1m high trunk attached to sufficient root masses that they may be excavated and placed inverted in the new lateral channel mouth as per the item for lateral channel treatment.
- Removal of roots/grubbing where required will be a separate item except where otherwise noted.
- Where the Engineer has flagged survey bars, such are to be protected and not disturbed.
- Where clearing widths are to be extended if described by a special provision for treatment of adjacent ditches or to create a stockpile area, such areas will be measured and included in the payment quantities.
- The eventual disposal of the chipping mat created will be as backfill in the canal.

- With respect to measurement, no separate measurement will be made. The payment will be using plan quantities using laid out widths and stations from the drawings. Individual trees will have been included in the quantity based on drip line measurements.
- Measurements will only be made where it is evident that differences exist with respect to either individual trees or the widths and lengths as shown on the drawings.
- Where adjustments in payment are necessary the evident rate per hectare from the tender will be applied to any decreased or increased area.
- Payment is to include access, perimeter delineation, lateral channel culverts, protection/identification of survey bars and all other work listed.

*b) Along Dyke Canal Interface (Item 19)*

- Clearing is required along the dyke canal interface generally in all areas of canal relocation where a berm is to be eventually constructed on the canal backfill adjacent to the existing dyke and in areas where the canal is to be cleaned out using the dyke or dyke road on the inside of the canal.
- In Interval 8 where the canal is to be cleaned from an outside dyke, clearing along the dyke canal interface will not be required except for irrigation or guide rail purposes.
- Where the canal work involves the relocation of the canal without the construction of a berm beside the dyke, the trees are to remain except where required to be removed for either irrigation or guide rail construction.
- Also in these locations where the trees ultimately, and only, are required to be removed for road reconstruction purposes, such removal will be part of the road work items.
- The aerial drawings will contain notes with respect to the requirement for clearing along the dyke canal interface.
- There will be no layout for such work.
- The method may be by chain sawing or by grinding methods. The roots are to remain in this type of clearing. The method to be used is to be selected by the Contractor but in general:
  - Where the dyke is used as a road or a lane, materials are to be removed and disposed of off site except where the extent of work notes indicate such may be placed over leveled spoil or except where the adjacent owner allows/requests trunks or chippings to be placed and left on his property. Any non mulched portions are to be hauled away.
  - Where the work is along the dyke canal interface where the dyke is an earth surface only and is not used, any chippings created may be leveled on the surface of the dyke.
  - Where the clearing is done as part of clearing for leveling areas on the inside of the dyke, any chippings may be windrowed together with other chippings from adjacent clearing areas, and either left as a windrow or spread over the leveled spoil once dry or leveled in part on the dyke surface. Non-chipped or mulched materials would have to be disposed off site.
- Part of the work included with clearing of trees along the dyke/canal interface is the requirement that all trunks remaining are to be treated with an approved injection to kill the remaining root mass. The product to be used is to be pre-approved with the Engineer.
- With respect to measurement, there will not be a measurement for application for such injection as the work is to be done by the Board.

- The clearing is to be a separate plan quantity item or is to be included in the plan quantity item for clearing areas for leveling and the Contractor is to satisfy himself of the number of trees to be removed. Adjustments will only be made if both parties agree measurements should be made.
- Where the extent of work drawings indicate that in general no clearing is required along the dyke canal interface and then subsequent clearing is required for irrigation or guide rail purposes, a separate measurement will be made for clearing using drip areas and payment will be made at the rate evident from the tender documents in other locations and the method of clearing will be to ensure that all felled or chipped materials are disposed of off site except where the adjacent landowner requires such.

 

*c) On Lands to be used for Leveling (Item 18)*

- This is required in all intervals where leveling of canal bottom cleanout material is to occur on lands inside of the dyke. The aerial drawings show the locations for such and generally the width required to be cleared is 25 metres from the inside edge of the top of dyke plus a 7.5m width for windrowing. As part of this quantity, any trees/brush on the dyke itself are included including the trees along the dyke canal interface.
- With respect to layout, there will be no layout where the standard 32.5m plus the dyke surface are required.
- Where a greater width is required due to the existence of buildings and requires concentration of leveling, the Engineer will provide such additional layout.
- The Engineer may provide stakes at the 32.5m offset and where done the Contractor will be required to replace ribbon along such stakes.
- The Contractor is required to meet and review the work with all landowners where leveling widths are increased due to building existence.
- The method of clearing is to be by chipping/mulching as required in the clearing for Method 1 for relocation widths. In addition, the method is to involve equipment that is capable of grinding the upper 300mm of root mass along part of the dyke surface and along the leveling area but not on the canal dyke interface.
- After the grinding/mulching operation is undertaken, a windrow is to be created in the 7.5m width to contain the leveled material and once the leveled material is dry, the windrowed chip/mulch is to be spread over the graded and leveled materials except where a landowner specifically requests that the windrow remain.
- When the windrow is spread over the leveled material, it may also be spread over any dyke that is an earthen surface except where the Engineer indicates otherwise.
- Where a landowner allows a clearing method involving chain sawing trees and pushing such into a permanent windrow in the 7.5m width, the Engineer may allow this method as opposed to chipping and mulching but only in those instances where such will not impact the approach of the Contractor and where the Contractor agrees to do such rather than chipping and mulching.
- Where grinding of roots is <u>not</u> to be done, the Engineer will indicate such in the Extent of Work notes.
- Grinding of roots is not to be done along the canal dyke interface or on a 6m width inwards from the edge of the canal (here, injection of stumps as described will be done by the Board).

- With respect to measurement, no separate measurement will be made. The payment will be using plan quantities using laid out widths and stations from the drawings. Individual trees will have been included in the quantity based on drip line measurements.
- Measurements will only be made where it is evident that differences exist with respect to either individual trees or the widths and lengths as shown on the drawings.
- Where adjustments in payment are necessary the evident rate per hectare from the tender will be applied to any decreased or increased area.

- If it is evident that a greater width than an average of 32.5m plus the dyke surface is involved in any specific interval or on any specific property, measurement may be made.
- Where the landowner allows a greater area on his property to be used to avoid clearing and leveling on other properties, a measurement of all area properties cleared may be made to determine if an adjustment is necessary.

*d) Along Route for Widening on the Outside of the Canal (Item 17)*

- Clearing for widening is to occur in most (but not all) locations of cleanout. The aerial drawings will indicate the approximate widths required but there will be no separate layout. The

 

requirement of the Contractor is to clear such trees as necessary to allow excavation to create the water width at the specified elevation as shown on the drawings and/or cross sections.

- This clearing may be included in the excavation item where these documents so indicate.
- In this type of work where a landowner requires individual trees to be saved, the landowner will be required to provide access to the Contractor to do such.
- The method of undertaking clearing in a widening area is to be selected by the Contractor but may involve chain sawing, pulling the tree across the canal and then chipping such, or chipping such on site and then excavating chipped materials from the canal.
- Where the tree is pulled over to the dyke, the materials are to be hauled away or chipped and disposed together with chippings from the dyke side.
- At all lateral channel locations, the Contractor is to leave a 1m high trunk attached to sufficient root masses that they may be excavated and placed inverted in the new lateral channel mouth as per the item for lateral channel treatment unless the Contractor chooses to protect the mouths with rock riprap and filter fabric.
- Where it is evident that root masses from trees beyond the required width for widening will extend into the canal, the Contractor is to clear such trees prior to the excavation of the root mass. Also where fallen trees exist, such are to be removed and similarly chipped or disposed of.
- There will be no separate measurement for clearing for widening. The plan quantities only will be used, utilizing the average widths and lengths. Measurement will only be made if it is evident that significantly different widths are involved.
- The payment will be at the lump sum evident using the plan quantity and the evident unit price, except where adjustments are necessary, in which case the evident unit rate will be applied.

*e) Common to all Clearing Types (Items 16 to 19)*

- Where buildings, structures, old vehicles, debris exist in an area to be cleared, the Contractor is to approach the landowner and require him to remove such. The Board and/or Engineer may also contact owners with respect to removal of such. Where an owner does not remove such after notification, the Contractor is to carefully (as much as equipment allows) remove by excavator or bulldozer any structures, vehicles, buildings or debris, etc. in the area to be cleared to outside the maintenance strip or beyond the strip required for windrowing.
- Where such is along a dyke that is to be used for a haul route and/or is to be cleared, the materials are to be pushed off of the dyke at least a minimum of 6m away from the canal edge.
- Wherever a plant is encountered that is determined to be a species at risk, the Contractor will be required to leave such plant until a decision has been made as to its disposal or retention. Where any such species at risk is identified, a search may be made in the adjacent areas as well for further species. If the contractor is unable to move to adjacent areas or if operations are noticeably impacted adjustments in payment will be made.
- If an area must be protected, alternate methods of clearing will be specified to the Contractor.
- With respect to timing of clearing, all clearing must be undertaken in the period from mid September to mid March due to wildlife, waterfowl and nesting requirements.
- Wherever it is necessary to cross a lateral channel during clearing operations, culvert pipes and an embankment over such culvert pipes are to be installed as part of the clearing tender. The number of lateral channel crossings is equal to the number of lateral channels to be protected. There will be no separate measurement or payment to supply materials and to remove materials. The drawings will indicate the size of culverts required at a lateral crossing if different from twin 900mm pipe culverts or the equivalent to such (see also Construction Special Provision A.14).
- The payment for all clearing items is to include the work necessary to protect all encountered survey bars. The Engineer may pre-designate these and in other cases the Contractor will encounter others not pre-designated. Where the Contractor damages any bar that neither he nor the Engineer were aware of, there will be no liability to the Contractor.

***A2 GRUBBING/STUMP REMOVAL (Part of Items 1 to 9 Primarily)***

*a) Along Route for Relocation of New Canal*

- Grubbing is to be done wherever clearing is evident and undertaken. The method of grubbing/stump removal is to be selected by the Contractor but it is expected that such will be undertaken by normal excavation procedures.
- The disposal of the root mass is anticipated to involve use of such to create a berm between the new canal and the existing canal to confine materials placed in the existing canal but where a berm is not required, disposal may be in the outer edge of the backfilled canal.
- The ultimate disposal of the root mass where used for a berm, if the root mass protrudes above final required levels, is to be either as backfill below required grades for backfilling in the existing canal or is to involve grinding on site once dry, hauling away or any other method that is approved by the Engineer.
- Elevated berms beyond the level of the canal backfill once leveled will not be allowed. The cross-sections indicate the final elevations of the backfill.
- In scattered areas, the Engineer will designate root masses to be placed on the outside of the new canal for habitat enhancement. In general, one root mass every 200 metres may be placed outside of the maintenance line for habitat enhancement where such may be done without damage to other trees. The root mass shall be placed so that it is entirely clear of the maintenance strip.
- Also root masses may be used in lieu of log bundles along littoral shelves at a spacing of 200 metres. Where such are used, sufficient trunks shall be left secured to the root mass to allow its embedment.
- Where it is evident that the majority of the root mass is beyond the required outside channel bank but yet some protrudes in, the full root mass shall be removed unless the root mass can be sheared or cut in a neat fashion in which case only the protruding portion may be necessary to remove. In these instances the tree shall be felled and disposed of prior to cutting or removal of root mass.
- Also where it is evident that a tree outside of the required canal width, is dying or about to fall this root mass shall also be grubbed out.
- It will also be a requirement of the Contractor to save sufficient root masses to use at any lateral channel as a treatment at the mouth of the lateral channel.
- There will be no separate measurement for payment for grubbing/stump removal. This is to be included as part of the excavation item, root mass or log bundle item or lateral channel treatment item.

*b) Along Dyke Canal Interface (Item 19)*

- In those locations where it is evident that clearing is required along the dyke canal interface, root removal is not to be done unless specifically required.
- Where done, the root mass is to be ground or partially excavated to minimize disruption to the canal slope.
- The required locations for full or partial removal of root masses along the dyke canal interface is at locations for private drains and construction of guide rail posts and irrigation lines.
- Where root mass removal for road widening is required, such will be a separate item as part of the road widening work.
- Measurement for payment for root masses for irrigation and guide rail purposes will be paid as per the particular contingency item.
- Quantities set in the contingency item is an estimate only for any particular interval.
- All root masses remaining on a dyke canal interface even if partially removed or ground are to be injected to kill the root mass as specified in the clearing item and as described in a separate special provision by the Board.

*c) On Lands to be used for Leveling (Item 18)*

- The drawings indicate the areas to be cleared for leveling and such has been discussed under the clearing item.

 

- Where this type of clearing is required, as indicated in the clearing special provision, grinding of roots and stump masses over the upper 300mm is to be included as part of the clearing item.
- There will be no separate measurement for such grinding.
- However, if areas that do not require grinding as per the extent of work notes on the aerial drawings, are later required to be ground, the contingency item will be used and will be on the basis of square metres of area where grinding is required.
- Where additional individual root masses are ground, an approximate area of each root mass will be determined and will be the basis of payment using the contingency rate.

*d) Along Route for Widening on the Outside of the Canal (Item 17)*

- Grubbing and removal of roots will be required wherever clearing is required for widening as evident from the aerial drawings.
- The method of removal will be selected by the Contractor but is expected to involve removal by excavation equipment.
- In no case may a root mass be left in the cleaned out or excavated canal.
- Where root masses are only in part within the area required for clearing, the full root mass shall be removed as part of the item or the protruding portions may be sheared. Similarly if a falling or dead tree sits outside of the area required for canal bank, such is to be removed as part of the item for clearing and/or excavation.
- The disposal of all root masses will be to haul such away except where an owner specifically allows such to remain adjacent to the widening area.
- The Contractor may chip such before hauling away or haul the entire root mass.
- If the Contractor obtains approval to burn or to bury and if the Engineer approves such, such may be undertaken. In no case is the root mass to be left in a windrow unless the adjacent landowner specifically and in writing allows such.
- There will be no separate measurement for stump/root mass removal in widening areas. Such is to be included as part of the excavation item.

## *A3 EXCAVATION*

*a) Common Special Provision to all Ditch Types Involving Partial or Full Relocation (Part of Items 1, 2, 6, 7 & 9)*

- The aerial drawings and extent of work notes will indicate locations of each type of relocation type of channel. The aerials will designate the widths that are to be cleared for the channel and will also designate the approximate top of bank to top of bank channel and will also designate the required water width at the specified elevation of 218.75.
- It will be the Contractor's responsibility to undertake his excavation such that the required water width is provided.
- Cross-sections are included with these documents that indicate the channel configuration at specific intervals along the work. These cross-sections indicate side slopes, littoral shelf, and channel widths at specified water levels. These cross-sections are random throughout the project but they will apply for the canal types specified.
- These cross-sections represent the goal for the canals to be excavated. However where soil conditions do not permit such, the Engineer may authorize/require an alteration to the cross-section applicable but so that the required end area is still provided.
- If the Contractor is in doubt as to the applicability of a cross-section to the adjacent canal, he is to pre-discuss such with the Engineer.
- Soils borehole locations and borehole results are included in the documents to indicate the type of materials encountered during soil test holes. If a Contractor wishes to make additional determinations of materials prior to his work, he is able to do such.
- The geotechnical report is to be obtained, read and applied to all items of excavation.

 

- In general, all canal slopes are to be 3:1 except where it is specifically indicated by the cross-sections or the extent of work that flatter side slopes are required or where soils are encountered that require such flatter slopes.
- Outside slopes of littoral shelves may be/are to be 1:1 in peat soils.
- All canal depths are to be elevation 216.1 except at locations of deep pools.
- All canal types involving full relocation are required to have a littoral shelf as indicated by the cross-sections. A littoral shelf will be a best efforts approach and where it is impossible due to soil conditions to construct or maintain the littoral shelf, the only work required by the Contractor will be to be to attempt to construct such until approval is given to abandon such in the area of such poor soils.
- The littoral shelf is to be used for habitat enhancement, which are separate items of work.
- With respect to layout, the Engineer will provide stakes or ribbons at 50m intervals indicating the approximate extent of clearing. The Contractor then is to conduct his excavation within the cleared area so that a straight alignment is followed and such that the new canal is located on the outside edge of the cleared area, creating the maximum possible buffer between the existing and the new canal.
- It is suggested the Contractor fabricate a rope or equivalent to the required top of bank to top of bank canal width at ground level and that he use this to check his excavation width continuously.
- Separate layouts by the Engineer for canal banks or depths will not be made. The Contractor will be required to use GPS control and layout of his work so that the required cross-section, water widths and alignment is provided.
- The engineer will check the Contractor's widths and depths from time to time and any corrections necessary will have to be attended to.
- Methods of constructing the full relocation channels will be left to the Contractor but pre-approval of the Engineer is required. Possible types of canal excavation may involve:
  - A combination of equipment operating fully along the new route for the canal;
  - An option where equipment works in part on the new route and also in part from the dyke road;
  - A combination where equipment may work from the dyke road, the new canal route or from a barge;
  - In limited locations high float equipment operating in the water.
- Wherever work is done from using barge procedures or using in-water excavators, the special provisions for in-water equipment will apply and must be observed (see Construction Special Provision B.9).
- Where the Contractor elects to undertake components of the excavation using dyke side equipment, and the dyke is used as a road, the Contractor is to attend to all special provisions with respect to closing of the road, signing of the road, provision of construction signing, traffic control to satisfy the regulatory authority and to maintain local traffic access.
- Where dyke-side excavation methods are approved and used in areas of relocation without berms, the clearing along the canal dyke interface will be separately measured and paid in accordance with the evident unit prices from items for clearing along canal dyke interface.
- All materials excavated from sections of relocation are to be disposed of in the existing adjacent canal except where specifically indicated otherwise by the extent of work notes.
- The Contractor must construct necessary berms or embankments along the new and old canal interface to contain the backfilled materials in the old canal. Cross-sections indicate approximate heights.
- All sections of canals that are excavated are to be excavated as long pond areas. An unexcavated length of new canal alignment is to remain between the previously constructed section and a new section. This section of canal excavation is only to be excavated out after the canal section is completed and the canal is filled with water. Any exception to the approach of using long ponds and dewatering such would have to be preapproved by the engineer.
- The Contractor is to ensure that access is available to the section through the provision of suitably wide earth cofferdams across the backfilled canal and the provision of a sufficiently wide berm area between the new and the old canal to access the section to be removed. This berm area will have to

 

be shaped to final cross section simultaneous with the removal of the natural ground divide between the new excavation area and the previous excavation area.

- The Contractor is advised that once a canal section has been excavated, the length of canal is to be filled using pumps as opposed to excavating notches which may cause erosion of the new canal slopes. Only if erosion control measures acceptable to the Engineer are in place and provide the required results will filling of new canal sections be allowed by excavating between notches.
- Where soils have poor stability and where the Engineer directs, final slope excavation along the new/old canal interfaces is to be done only after all other excavation in the length is finished to give maximum stability to the berm.
- As soon as conditions allow the Contractor is to level/grade the backfill in the old canal. Where no future berm is involved the grading may be a gentle slope to the new canal. Where a berm is involved the grading is to be such that a surcharge at the berm base is created and then a level area is provided to the canal. Sufficient organic materials are to be left in the canal edge leveling to allow for placement on the berm once it is finally graded.
- Prior to undertaking any excavation for full relocation, the Contractor will be required to construct an 8m x 16m x 1m deep sediment pond to serve each section to be excavated. The construction of the sediment pond will not be separately measured or paid but is to be part of the excavation item (see Construction Special Provision B.12).
- Sediment ponds are to include a shallow inlet channel, shallow outlet channel and straw bales in the outlet channel.
- As well, and in addition to the sediment pond, an adjacent supernatant pond may be necessary as a contingency item. This facility is to be used to store any liquids that are deemed to have an unacceptable quality for discharge (see Construction Contingency Special Provision I.7).
- The Engineer will not require the excavation of the supernatant pond until there is evidence that such is required. However, where such are required, the Contractor is to do such as part of the contingency item.
- Also as part of each canal type involving relocation, a silt fence must be constructed along the full perimeter of the canal as part of the work. Separate measurement or payment will not be made. Silt fences are separately discussed (see Construction Special Provision B.2). It is possible silt fences may be deleted and if so a note to tenderers or a revised special provision will be prepared.
- The Contractor is to install an additional and high cofferdam to elev. 220.0 (a high flow cofferdam) upstream of the nearest bridge that is upstream of the work area so that in high runoff/flood situations, the upstream high waters created by diverting flow into the opposite canal will have less likelihood of flooding out the work area.
- The Board will supply sufficient materials, example geobaskets or aquadams, that the Contractor is to then fill and place to create the high flow cofferdam. Materials used will have to consider weather conditions.
- These high flow cofferdams would have to be moved from time to time to other bridges in order to minimize the length between such cofferdam and the work area.
- In addition, the Contractor would need to have on site and use sufficient high capacity pumps that he could discharge lateral flows coming towards his work area from lands between the high flow cofferdam and the work site.
- All relocation works are to be done in sub lengths of maximum of 1000m so that irrigation may be maintained during construction and to recognize fish shocking requirements. Lateral channels and/or roads, communal irrigation lines may dictate lesser excavation lengths than 1000 metres.
- The drawings in Volume 3 pages 4 to 14 show a number of locations where transverse earth cofferdams are mandatory to recognize lateral channels, communal irrigation and some individual irrigation lines.
- The Contractor is to schedule and construct his activities to ensure access to lengths of canal excavation is available using these transverse earth cofferdams. They shall be constructed of suitable materials and of sufficient width and shall be compacted sufficiently during construction that they may be used for access.

 

- Each sublength constructed is to be separately isolated by the placement of these transverse earth cofferdams in the existing canal so that materials dumped into the canal are contained. (Other types of cofferdams other than rock or rubble will not be approved unless the contractor develops a plan to show how access for emergency work and for the pond type of construction can be accommodated.)
- Also after the construction of cofferdams to isolate sections of canal to be backfilled, fish catching (shocking and relocation) must be undertaken prior to any excavation work. The Contractor is to be prepared to wait for fish catching to occur which may involve an average of 2 days from the time of commencement. Fish catching will be undertaken by the Board and is not required to be part of the Contractor's unit price. The Contractor is however required to co-ordinate the fish catching work.
- It is suggested in continuous work, timing of cofferdam work and need of irrigation work should also recognize this fish stocking requirement.
- The cofferdams that the Contractor is to construct (at up to 1000m intervals) are to be earth cofferdams where the materials used are sufficient for stability or rock cofferdams using 150 to 200mm gabion stone. Interlocking steel sheet piles or any alternate approach would require pre-approval obtained from the Engineer. Separate measurement and payment for construction of intermediate cofferdams will not be made on the assumption the materials are supplied as needed by the Board.
- Where the Board has stockpiled in advance the materials for the transverse dams and the contractor is required to load and haul such rather than using materials that are brought to the site by others, payment under the hauling item will be made.
- If there are neither stockpiles of material available nor suppliers of free fill and the Contractor is required to have fill for these dams imported, the fill will be paid at a pre-approved rate.
- Any materials for transverse dams that are supplied by the Contractor must be clean and free of unacceptable levels of contaminants and the Contractor is required to provide evidence of such. Engineer may check and reject any or all and charge the cost of checking if unacceptable materials were used.
- The heights of such cofferdams must be such to confine the backfill. A separate specification for this work is included (see Construction Special Provision A.17). The tender documents will indicate if the Board has already brought sufficient imported clays to the area that are to be used for these cofferdams.
- Upstream and downstream of each section of cofferdams, a turbidity curtain is to be supplied and installed. It is to be located a maximum of 15m away from the cofferdam and is to be included as part of the bid price for canal excavation. Turbidity curtains are separate discussed (see Construction Special Provision B.1).
- In all activities involving canal excavation, water samples including turbidity will be obtained by the Engineer or Board prior to the commencement of work and during work. If at any time excessive turbidity levels or unacceptable water quality is determined, the Engineer may alter the type of procedures or may suspend work until turbidity in water analyses are corrected.
- Where the turbidity problem is related to the Contractor's work, there will be no payment for suspension or alteration of work.
- Where the turbidity or water quality is beyond the Contractor's control, payment for standby or alternate works will be made.
- The excavation of the materials from the new route is to be undertaken such that the organic materials and root masses are placed along the divide between the new canal and the old canal. It is expected that the Contractor will place the root masses at the divide both to confine other materials placed in the old canal plus to possibly create a working platform for final excavation.
- The disposal of these root masses in the berms are separately discussed under the grubbing operation.
- The organic materials which are expected to be in the upper plateau are then to be placed in side of but adjacent to the root mass berm. In some cases the organic materials may have to be stacked above the root mass for later spreading.
- Then the materials with least organic content are to be placed in the balance of the canal with those materials having the least organic content desirably being placed adjacent to the existing berm.

 

- An overall requirement in canal backfilling is that the placement of newly excavated materials into the canal is to be done so that sediments are covered and confined to their existing locations and prevented from running away from the backfill.
- Prior to moving from any backfilled section to the next section to be backfilled, the Contractor will be required to rough grade the backfill of the old canal so there are no pockets left and so there is a gradual slope from the dyke to the new canal. Wherever a berm is to be ultimately created on the backfill, this initial grading is to be such that the depth of backfill is higher by the dyke where the berm is to be but with a flatter grade from there to the new canal.
- The work is also to be done, as best as possible, so that alongside the existing dyke, materials are placed so as to displace sediments away from the dyke edge to facilitate future berm construction and stability.
- It is anticipated in many lengths that the placement of newly excavated materials in the existing canal will be placed at a level higher than the existing grounds initially. This is to be undertaken to allow for consolidation. Refer to Phase 1 lines on the cross-sections. The materials are also to be placed to facilitate drainage from the dyke/canal roads across the backfill to the new canal. Also grading of the canal backfill will be required to berm materials adjacent to the dyke so the greatest slopes for drainage is at the canal and so that flatter slopes across the balance of the backfill are provided (see cross-sections).
- This initial leveling of the backfill is to be included in the bid prices for excavation.
- As part of the last work to be done in any tender, the Contractor is to return to each length of backfilled canal and regrade such to fill settlement pockets, to improve the cross drainage and to better shape any material place for the berm.
- Separate payment for this work will be made as per Tender Item 22.
- Where root masses or chainsawn trunks are placed along the divide between the new and old canal, the height of such must be kept to the levels shown by the cross-sections or must be sheared or ground to these levels or excavated out and hauled away once materials are dry enough to allow such to be done. Such work is all part of the excavation item.
- Materials excavated and placed in the old canal will be sampled by others and from time to time for pesticide or hydrocarbon contents if there is evidence such is a concern. If for any reason materials are found with unacceptable soil parameters, the Contractor may be directed to haul such materials to alternate disposal sites. Additional payment will be made for both hauling such away and for hauling other materials in to backfill the canal as per the hauling items.
- The aerial drawings/extent of work indicate a maintenance strip is to remain beyond the new channel. Excavation is not to occur in this maintenance strip except where directed by the Engineer and if so directed, additional payment will be made.
- Wherever a tributary channel outlets into an area of canal relocation, the mouth of the tributary channel is to be protected with root masses as part of the tributary channel treatment process. However the excavation process is to leave sufficient root masses that can be used for the lateral channel protection. Separate measurement will be made (see Construction Special Provision A.13).
- All canal relocation types must consider irrigation inlets and the procedures undertaken must be such to facilitate and allow such irrigation extensions. The Engineer will mark out irrigation lines to extend to the canal and the Contractor is to consider such in creating berms and leveling backfill.
- It will be required that the canal backfill at an above grade irrigation line extension be placed close to the final grade for the irrigation line to allow immediate extension.
- Trunks or root masses, to help contain backfill in the existing canal, are not to be placed immediately at an irrigation inlet so easier access to new canal is facilitated.
- Where a below grade irrigation inlet is to be constructed,, unless such is provided for by one of the mandatory transverse cofferdam locations, a separate compacted transverse clay cofferdam (as per Construction Special Provision A.17) is to be constructed fully across the existing canal and to a level just above water level and to a 5m minimum top width with payment at the irrigation item or at the tender item for irrigation cofferdams.

 

- The drawings indicate that at a frequency of approximately 2000 to 3000m, a 200m long deep pool is to be constructed in all areas of canal relocation (see Construction Special Provision B.4). Deep pools are separately discussed and will be separately paid. Littoral shelves are not required at deep pool locations.
- With respect to overhead utility crossings, the drawings indicate the location of such overhead crossings. Where the Engineer and Board determine that such overhead crossings must be relocated or extended prior to work, such will be undertaken. Where it has been determined that the overhead crossing may remain as it is, the Contractor is to undertake his work so as to protect the utility crossing. If he chooses, on his own, to relocate or remove and replace such utility crossing, it will be his responsibility and cost to undertake such in accordance with the requirements of the utility authority.
- The drawings indicate approximate locations and depths of underground utility crossings for Bell or Gas. The Contractor is required however to have the utility representatives on-site prior to his work to confirm all locations of underground crossings.
- Use of the Engineer's drawings only for underground or overhead utility crossings will not relieve the Contractor of any expense or liability should other utility crossings be encountered and damaged by his activities.
- Access to all relocation types of project are to be from roadways at the ends or in the midst of any particular interval. Where access across private lands has been secured, such will be indicated on the drawings. Use and maintenance of any private access are separately covered by a special provision but the payment for use and maintenance of such is to be part of the canal relocation type (see Construction Special Provision E.10).
- Confining end cofferdams are also to be constructed and used as access corridors.
- In many locations of canal relocation, canal side wells presently exist. These wells may be relocated by the Board or County prior to work but if such are not relocated, they are to be maintained and to be extended to higher elevations and also their outlets are to be extended. Separate payment will be made for raising elevations of wells and for extending their outlets (see Construction Special Provisions D.20 and D.21). But the Contractor in his excavation shall consider and recognize that such wells exist. There may be wells existing that have not been prelocated and where such are encountered, the Contractor is to protect such as though they had been previously noted.
- Where through no fault of the Contractor an unknown well is hit or damaged or buried, separate payment will be made for repair and reconstruction of the damaged well.
- Where a water line exists in the bottom of the canal being filled in, the Engineer will designate such and the Contractor is to carefully conduct his backfilling so as to minimize damage to the water line. If after using care, the waterline is damaged and a new line is necessary, the Engineer will provide for separate payment for any new line (see Construction Special Provision I.10).
- Timing of any canal relocation work is to be no earlier than June 1 and is to be later than March 29 of any year.
- All new slopes are to be 3:1 except where specially noted otherwise. If the Engineer determines at any time that the required 3:1 slopes are not sufficient, he may direct the Contractor to construct the work with 4:1 slopes. No alteration in payment will be made except where the Engineer directs that the channel width be increased. In such case, the payment to the Contractor will be increased prorata with the quantity of excavation from the altered canal in comparison to the excavation from the canal as designed. Unit prices per cubic metre will be computed from the tendered prices.
- Where the Engineer has determined that any of the canal relocation may be undertaken in part from a width of land on the outside of the new canal, the drawings will separately identify such and the Contractor is to ensure that such width of land is carefully used and is restored to its existing condition upon completion of work. He will be required to access as designated and to observe any specific requirements for such use. If the Contractor makes his own arrangements with any other landowner, such access will be between the landowner and the Contractor.
- Along any residential areas existing on the outside of any canal relocation, the Contractor is to trim his slopes such that a uniform top of bank exists. Where ruts or damage to the lawn areas occurs, the

 

Contractor will be required to place topsoil and seed to provide a reasonable lawn edge adjacent to the canal.

- Where fields exist on the outside of the canal, the documents require a 3m wide grass buffer strip to be constructed. Separate special provisions and payment will be provided for these grass buffer strips (see Construction Special Provision B.17).
- Where any drain pipes outlet into the canal from fields on the outside, these pipe outlets shall be protected and given an outlet during the work and shall be cut and adjusted to fit the new bank at the end of work with relocation and reuse of any protection that exits. No separate payment for such work will be made.
- At above-grade irrigation lines, the grading of the backfill shall be kept at the level necessary for the irrigation with a minor allowance for settlement.
- The Contractor is to ensure that he has access across a previously constructed transverse cofferdam to the downstream end of any new canal excavation section for final connection purposes and for emergency purposes.
- The Contractor is to ensure that all trunks and root masses placed along the interface between the new and the old canal consider the locations of the irrigation lines so that excavation or cutting through trunks or root masses to provide irrigation is not necessary.
- Wherever a berm exists on the outside of any canal that is being relocated, the Contractor shall ensure that a similar berm is created on the outside of the new canal excavation, unless the landowner indicates that such is not required.
- With respect to measurement for payment, there will be no separate measurement for any canal type work. Plan stations will be used in the payment per linear metre and will be compensation in full for all work to be included. Wherever an alteration is made in canal types using plan stations, the payment will be altered in accordance.
- If any dispute arises due to the length of any canal type or the quantity of excavation per lineal metre, lineal or volume measurements will then be made to confirm such. The Engineer reserves the right to charge costs to the Contractor for frivolous or unjustified requests that do not result in significant differences. Where adjustment for payment is warranted, it will be proportional to the evident tendered prices.
- Payment for canal types is to include, unless deleted by an addendum, all work involved including the silt fences, turbidity curtains, littoral shelves, root mass placement on littoral shelves, pond type of construction with dewatering, intermediate cofferdams (where the material is brought to the site by the Board), sediment ponds, traffic control, excavation, placement of backfill, placement/removal of containment berms on the backfill, supply and usage of pumps to keep the work area primarily dewatered, provision for overhead and underground utility crossings, co-ordinating with fish catching, protecting wells, recognizing irrigation inlets, grading and maintaining private access routes, allowing turbidity and sediment analyses to be undertaken, protecting water lines, outside edge drain work, rough grading of canal backfill before drying has occurred so as to allow drainage of the backfill and to allow for some surcharging and to remove high areas of root masses or trunks along the new and old canal interface where used as berms, grading of backfill to allow above grade irrigation line extensions, fuelling provisions, attendance to spill response plan, attending to mud, dust and snow control, addressing air emission, layout and grade control concerns, outside edge berms, and placing/moving/maintaining high flow cofferdams and pumps (where the cofferdam materials are supplied by the Board).
- The construction of additional earth transverse cofferdams at below grade irrigation lines that cannot be accommodated by the required layout of transverse cofferdams will be separately measured and paid.
- Additional payment will be made where the Contractor has to haul materials for transverse cofferdams and for the final leveling of the backfill.

*b) Common Special Provisions for All Cleanout Sections of Canal (Part of Items 3, 4, 5 & 8)*

 

- In general, existing canals are to be cleaned wherever the canal is along a dyke that is not used as a road and does not have a power line along the dyke and is also to be undertaken in other areas along dyke roads where space does not exist for relocation of the canal or where the drawings indicate that cleanout is to be undertaken for any other reason.
- There will be no layout for canal cleanouts. It will be the Contractor's responsibility to undertake his activities such that the specified minimum water widths are provided as noted on the aerial drawings/extent of work notes and/or as indicated by the cross-sections. Again GPS control and layout by the Contractor is required. Widenings will be necessary as indicated to provide the required widths in most intervals.
- The shape of the cleanout is to be parabolic as evident on the cross-sections and is to be to the elevation of 216:1 except at deep pools or where otherwise indicated.
- The aerial drawings and the extent of work notes on the drawings and cross-sections will indicate the required water width to be provided by the cleanout.
- The cleanout is to be such that existing dykes are not damaged.
- In some cases where a high outside bank exists, 3:1 or 4:1 slopes are to be maintained to an elevation of 219.0 and then the Engineer may allow a steeper bank from that elevation to exist on the ground especially where the existing ground level is at such steeper slope.
- The engineer will check water widths and profiles/depths of canal bottom from time to time and the Contractor will be required to correct any deficiencies.
- There are different types of canal cleanout and they are separated by whether the materials are to be fully leveled on the inside of the dyke, whether they are to be partially leveled and partially hauled or where they are to be fully hauled.
- The widening work necessary to provide the required width will be separately paid for clearing although measurement will not be made.
- Grubbing and disposal of grubbed materials are to be part of the cleanout item and are separately discussed under the grubbing item.
- For any debris such as abandoned appliances, vehicles or other metallic or wooden structures that cannot be leveled and that are encountered, the Contractor will be required to haul such away to a landfill site. The materials hauled will be paid at the contingency item for hauling of excavated debris items (see Construction Special Provision I.2).
- The type of bucket used in cleanouts is to be selected so as to minimize loss or splash of water onto dyke surfaces. The Contractor is to have each bucket that he proposes to use preapproved with the Engineer.
- The type of equipment that may be used for canal cleanout may be draglines, standard excavators and/or long reach excavators.
- Barge equipment may be used if the Contractor so selects. Also high float excavators may be used. Where a barge or high float excavation equipment is used, the specifications for in-water equipment must be followed (see Construction Special Provision B.9).
- Turbidity curtains are to be placed and maintained in the channel at each end of a section to be cleaned out. Generally sections of cleanout are to be a maximum of 1000m in length so as to allow temporary irrigation lines to be placed.
- The Contractor is to undertake his cleanout work to recognize and protect temporary irrigation lines, lateral channel flows and communal irrigation lines.
- Most cleanout activities are to be undertaken from the existing dyke.
- Where the existing dyke is not used, at any time, for farm or other traffic, traffic procedure provisions are not required.
- However, where excavation occurs from the dyke that is used by landowners as a farmlane or as a road, traffic control provisions of this document must be observed. Private access must be maintained and mud and dust control provisions are to be observed.
- There is no littoral shelf required in cleanout sections.

 

- Roots are not to be removed on the dyke side and excavation is to occur so that the dyke is not damaged. Trees are to be close cut on surfaces of dykes and at canal/dyke interfaces as part of the clearing item. Injection of roots once cut may be undertaken by the Board.
- The existing irrigation inlets will be marked where they are known by the Engineer and the Contractor is to locate and protect such. Where unknown irrigation lines are encountered, the Contractor is to similarly protect such. If such should be damaged through no fault of the Contractor, the Engineer will direct the alternate work to be undertaken and will provide separate payment for such.
- Temporary irrigation lines are to be provided in cleanout areas (see Construction Special Provision D.24).
- Cleanouts adjacent to bridges are to be blended to the cleanout undertaken through the bridge.
- With respect to overhead utility crossings, the drawings indicate the location of such overhead crossings. Where the Engineer and Board determine that such overhead crossings must be relocated or extended prior to work, such will be undertaken. Where it has been determined that the overhead crossing may remain as it is, the Contractor is to undertake his work so as to protect the utility crossing. If he chooses on his own to relocate or remove and replace such utility crossing, it will be his responsibility and cost to undertake such in accordance with the requirements of the utility authority.
- The drawings may indicate the approximate depths and locations of underground utility crossing for Bell or Gas. The Contractor is required however to have the utility representatives on-site prior to his work to confirm all locations of underground crossings.
- Use of the Engineer's drawings only for underground or overhead utility crossings will not relieve the Contractor of any expense or liability should other utility crossings be encountered and damaged by his activities.
- The existing dyke surface is to be maintained width and height wise and is to be left in a graded and compacted condition.
- Where a guiderail exists along any dyke where a cleanout is to be undertaken, the Contractor is to work around such guide rail. If he chooses to remove such, it will be his responsibility to replace such to its existing or better condition.
- Where the Extent of Work notes indicate that a cleanout may be taken from the outside of the canal on private lands, the Contractor is to use the access indicated, and is to restore the private lands to their existing or better condition upon completion of work. Where the lands exist in a "green" condition, such shall be topsoiled, graded and seeded upon completion.
- In any area of pumping stations, the inlets to the pumping station are to be located and protected as part of the work.
- Where drain outlets or wells or paralleling drains exist on the outside of any canal being cleaned, the Contractor is to locate and protect such. Where any well, paralleling drain or drain outlet is altered due to the widening of the canal, separate payment will be made for reconstruction of the well drain outlet or paralleling drain. Where tender items apply, payment will be made in accordance with the evident unit price. Where items do not apply, payment will be on a pre-approved time and material basis.
- Where a well, drain outlet or irrigation inlet line exists along the dyke canal interface, the Engineer will locate such and the Contractor's responsibility is to protect such during work. Any required work re the well, inlet or outlet will be a separate item of work. If any well, outlet or inlet should not be known or pre-located and are damaged the Engineer will provide for separate payment for reconstruction of such.
- Where a dyke must be used for cleanout and there is minimal area between buildings and the canal, the clearing will be to a minimum and the Contractor is to conduct his activities so as to avoid damage to the adjacent structures or buildings. The contractor is to pre satisfy himself of all buildings or structures that may restrict his activities. In these areas where hauling is necessary to beyond the interval, payment will be made at the appropriate item. This is further discussed herin.

 

- Where the dyke used for cleanout is a private lane, the Contractor will be required to ensure that maintenance to any building or field is available from both ends of the dyke at all times. To provide for such, clearing of the full length of dyke must be undertaken in advance.
- Where a hydro line runs continuously along the dyke, the Engineer and Board may provide for the temporary relocation of such hydro line prior to the work. Where it is determined that such temporary relocation cannot be undertaken, the Contractor is to undertake his work so as to protect the utility line.
- With respect to measurement for payment, there will be no separate measurement for payment. The plan stations will be used except where it is determined that an alteration is required due to the change in length or where there is dispute about the length or volume. In such cases, field measurements of length and volume will be undertaken. Where an alteration is necessary, the evident unit price will be applied (see Page RS-13 re Engineer may charge for frivolous checks in dispute areas).
- The payment is to include all works to place turbidity curtains, to work around overhead utilities, to locate and protect underground utilities or irrigation inlets and wells, to attend to grubbing and disposal in widening areas, to provide for excavation in widening and in the channel, to provide for traffic control and access provisions, to work around guide rails, to maintain and restore access routes, to rough level and then final level excavated materials after clearing and topsoil stripping is completed, to regrade chippings or topsoil over leveled material, and to attend to all other matters listed above.

*c) Type I Canal Work (Item 1)*

- This is the canal work involved where a section of canal relocation tapers to a section of cleanout or to a section of canal that is not having work done. The aerial drawings and extent of work notes indicate location of such sections.
- Separate layout will not be undertaken for such types of work but the locations will be separately noted in the field.
- Where a cofferdam is required to be constructed to create the inside edge of the Type I canal, the Engineer will assist in providing the location and alignment of the cofferdam. However, the Contractor must provide his own laser or GPS control to lay out cofferdams or inside edges of Type I work.
- Separate payment will be made for these longitudinal cofferdams (see Construction Special Provision A.16).
- The transition lengths of canal are to be constructed so that the minimum radii of inside curves (water's edge) is 100 metre radius. The outside curves will be 100m plus the canal water width. Widths of Type I canal is to be as set out on the aerial drawings.
- Disposal of materials is to be on the inside of cofferdam or in the adjacent lengths of canal being filled.
- There is to be no sudden alignment changes in a transition type.
- All water surfaces, curves or widths must be gradual transitions from relocations to existing sections.
- Littoral shelves would gradually taper out in Type I canal sections.
- The common items for canal relocation work apply.
- Partial dewatering, use of native materials and slope protection methods may be used where pre-approved with the Engineer. This will be similar to Type IV channel work and the payment will be charged to this item where such is done. There will then be no payment for a cofferdam. No additional payment for disposal of surplus materials will be made.

*d) Type II Canal Work (Item 2)*

- This is the canal work involved with full relocation and where a berm is to be ultimately constructed.
- This is the predominant work on the project.
- The drawings indicate the locations and widths of such type of canal work.
- Littoral shelf is required over the full length of Type II canals except at deep pools or except where deleted due to soil conditions.

 

- The common items for canal relocation work apply.
- In this canal type the second leveling of the backfill once dry (Item 22) may not be the final leveling since a further shaping and regrading of backfill may be necessary when final berm work occurs.
- Both the second and third leveling will be separately paid.

*e) Type III-L Canal Work (Item 3)*

- This is the canal work involving cleanout where the materials are to be leveled on the inside of the dyke.
- In this type of canal work, the desirable width for leveling is to be 25 metres measured from the inside top of bank of the existing dyke, and as well, a 7.5m width for windrowing topsoils or cleared materials is to be provided.
- The drawings indicate the locations for Type III-L work.
- The cross-sections indicate the general configuration of the channel and the leveling.
- The excavated materials are to be leveled such that the top of dyke elevation is not raised and so that drainage is provided without discharge to the new canal.
- The excavated materials may be placed, after clearing and topsoil stripping occurs, to a higher level, but a confining windrow of either topsoil or chippings is to be provided on the inside edge of the leveling area also.
- When materials are dry, such are to be leveled to a uniform slope and to the required level and are to be allowed to revegetate.
- Where the area is wooded, the chipped materials are to be respread over the leveled materials once dry unless the landowner requires the windrow pile to remain. Where any of Type III-L work occurs in areas of fields on the inside of the dyke, topsoils are to be separately stripped and are to be windrowed into the 7.5m width. Such are to remain until excavated materials are dry and leveled and then the topsoils are to be respread over the leveled materials.
- All topsoil stripping and chipping replacing work is to be part of the Type III-L work.
- The stripping of the topsoils and the clearing are to be separately measured and paid.
- The Engineer will not provide layout for Type III-L work except where widths greater than 32.5m are required where buildings exist within the leveling area. In these instances the layout will be for the clearing. The Contractor will be required to do layout elsewhere.
- In those areas of Type III-L work where excavated materials have to be moved laterally, due to building locations, prior to leveling, separate payment will not be made for such lateral movement.
- However, where the materials have to be loaded and hauled away outside of the work interval, separate payment will be made.
- In all areas of clearing the Engineer will have indicated the boundaries for clearing.
- The windrows of topsoiled or chipping material are to be respread onto the leveled material so that encroachment beyond the 32.5m does not occur except where written approval from the landowner is obtained.
- Where the landowner does not wish topsoils to be stripped and windrowed and respread, only the 25m width is to be used but a silt fence is to be constructed at the perimeter of such as part of the work. The silt fence must be maintained throughout the leveling operation.
- The common items for cleanout work apply.
- If in the area of leveling the landowner requires the leveled material to be seeded, the Contractor is to acquire the seed from the Board or is to verify the type of seed that the owner wishes. Separate measurement for payment for seeding of leveled areas will be made as per the contingency item.
- Payment for Type III-L work is to include the leveling of the materials by bulldozer once such are dry and the respreading of topsoils and/or chipped materials.

*f) Type III-H Canal Work (Item 4)*

- This is the cleanout work where the excavated materials are to be loaded and hauled as they are excavated.

 

- This will require that trucks that minimize spillage are used and that excavation equipment buckets are also used to minimize spillage. Approval of trucks and buckets must be obtained. Where the Engineer does not feel that satisfactory truck equipment and buckets are used, he will suspend operations until such are supplied.
- The drawings indicate whether the work is to be done from the existing dyke roads that are paved or from the dykes that are not paved or to be done from the outside lands, whether it is the small scheme dyke or private lands.
- The possible designated stockpile areas are shown on the drawings or listed in the specifications. Some materials may be temporarily stockpiled and some may be permanently stockpiled depending on the location.
- Where materials are needed for berm construction in sections of full relocation, the materials are to be hauled directly to the intervals if the intervals are ready for the material, to avoid double hauling.
- The Contractor is to plan his operations so that double hauling only occurs where approved by the Engineer. If the Contractor wishes to stockpile where such is not necessary, he will be responsible for the second hauling costs.
- All provisions of the documents with respect to dust suppressant, maintenance of haul routes and maintenance of traffic will apply to hauling operations.
- All roads are to be cleaned free of mud daily and are to be cleaned at the completion of work with no separate payment. Where the work occurs on granular or earth surfaces, removal of ruts, grading of the road and possible addition of new gravel will be necessary.
- Where the Engineer authorizes new granular for restoration of gravel roads such will be paid at the unit price evident from the tender.
- Measurement for payment for this type of activity is to include the hauling of materials to one of the designated disposal sites or to an interval where berm construction is required.
- If the materials are hauled to a temporary site and then have to be hauled again after dry, separate measurement and payment for the second hauling will be made as per the hauling special provisions but only where pre-approval to do such is obtained from the Engineer.
- Where this type of operation is to occur from a dyke that is not used as a road, existing fences along the dyke must be protected and the width of dyke to be used is to be as specified.
- If this type of activity must be undertaken in areas of buildings and where otherwise the work is Type III-L work, separate measurement for hauling will not occur and the work is to be deemed to be part of the Type III-L work unless specifically indicated otherwise by the Extent of Work notes.
- All the common special provisions for cleanout work apply.

*g) Type III-H&L Canal Work (Item 5)*

- This is the canal cleanout work involved where excavated materials are placed on the designated surface, whether it is the small scheme dyke or whether it is the boulevard in Highway 9 and/or where the materials are otherwise leveled in part and ultimately hauled away in part once dry.
- In this type of canal excavation, the Contractor will be required, after clearing is completed, to undertake stripping of the surface of the leveling areas to create a berm on either side of the area, to place a silt fence on the outside of each berm, and then to place the excavated material between such berms.
- The berm must be a minimum of 2 metres in width and of sufficient height to contain the excavated materials.
- The excavated materials are to be placed between the containment berms and are to be leveled as much as possible prior to drying and are to be releveled upon completion of drying.
- Where the Engineer directs, a portion of the excavated materials placed between the berms is to be loaded and hauled off site with the balance of the material to be leveled. The containment berm material is then to be backdragged in part over the leveled material. Where the drawings require such, the backdragged containment berm material is to be seeded. Seeding will be a separate contingency item (see Construction Special Provision I.5).

 

- Due to the unknown amount of material that will have to be hauled, there will be separate measurement and payment for those materials that are hauled in this type of work. The quantity of materials to be hauled will be pre designated by the Engineer. Cross-sections will be taken of either the area prior to hauling and afterwards or at the disposal site prior to and after hauling. Payment will be made in accordance with Construction Special Provision A.5.
- It will, in some areas, be the contractor's choice as to whether to haul materials as they are excavated or after they are placed and dried, but subject to the Engineer's pre-approval. There will be no difference in the payment made for the hauling.
- The materials that remain after the hauling are to be leveled and graded and then the windrows on either side are to be respread over the surface of the leveled materials.
- Where the work occurs along Highway 9, the work to implement traffic control as required by MTO, to protect existing irrigation lines and drain crossings, to protect the monument historical area are to be included as part of the unit price bid for this type of work. As well, the locating and protection of the underground gas and Bell lines is to be included.
- It is suggested the Contractor advise of his intentions re hauling from Highway 9 as early as possible to allow the Engineer to determine the Traffic Control requirements from MTO as early as possible.
- Where the underground Bell or gas line requires relocation prior to such work, separate payment for such will be undertaken.
- Where the Engineer indicates that an embankment is required to be left above the underground Bell or gas line, the Contractor is to provide such without additional payment. The Contractor will be required to have such underground Bell and gas lines pre-located in this area.
- The berms are to be graded to match the slopes of the adjacent portion of the leveling area. Then the excavated materials are to be placed and are to be graded once dry, so that the surface when completed is comparable to the existing surface but at a higher elevation as per the cross-sections enclosed.
- The component that is hauled will be subject to the same specifications as for Ditch Type III-H which is cleanout with hauling but separate payment for hauling will be made.
- The measurement for payment will include all works of excavation, silt fences, creation of berms, leveling of materials and all other work, etc. except for the hauling costs.

*h) Type IV Canal Work (Item 6)*

- This is canal work involving a continuous partial relocation that is not a Type I taper section. This work may be undertaken with prior dewatering or may be undertaken with no dewatering. The drawings indicate where a continuous partial relocation of canal is involved.
- Where the work is undertaken with or without dewatering, a suitable base for the embankment is to be constructed in advance. The Contractor may construct the base using rock but where such is done, an underlay must be placed under the rock.
- The whole partial relocation berm may be constructed of rock or may be a combination of rock and/or excavated or imported earth. Where rock forms part of the embankment, the slopes are to be 3:1 where earth is used and 2:1 where rock is used. A filter fabric would be necessary at the full road and clay interface.
- Where excavated materials are used, and if dewatering does not occur, the materials are to be placed only above the existing water levels. Such are to be compacted by track equipment and are to be seeded upon completion.
- If there is minimal sediment on the canal, the partial may be done with an imported clay base provided the sediments are displaced first.
- Native excavated materials may only be the base if it is evident such are stable at a 3:1 slope in wet conditions. The Engineer reserves the right to reject native soils if geotechnical opinions are that such are not suitable. The geotechnical report did suggest native soils could be used if full dewatering occurred. The Engineer would want to see a trial section first with dewatering and then make the decision on use of native soils for the full embankment. The Engineer may require geofabric

 

reinforcement mats at various levels in the native earth berm. Where required separate measurement and payment for such will be made.

- In this type of activity the core of the berm and its base are to be constructed using the least organic excavated materials. The excavated organic materials are to be saved and placed on the surface of the berm.
- The canal width is to be as indicated on the drawings.
- Where work is undertaken from the outside, the special provisions for relocation works apply.
- All the applicable common provisions for relocation will apply.
- Where the work is undertaken using the dewatering process, the Contractor is to construct suitable cofferdams and provide required pumping. Full dewatering is only to be undertaken after trial to study potential stability problems of the canal. The Contractor will be responsible for all works to construct cofferdams, to undertake dewatering and to conduct the excavation and berm construction. Pumps must discharge through sediment bags and then into sediment ponds or directly into sediment ponds with outlet channels protected by straw bale dams. All discharges must be into the canal upstream of turbidity curtains. It has been anticipated in this type of work the excavated materials will be used fully for the berm construction.
- The rate of dewatering is to be as per the 2003 geotechnical report's recommendations.
- Where there is a surplus of material, the Contractor will be required to select the appropriate type of berm construction and to haul away and dispose of the surplus materials, all as part of the payment.
- Where the Contractor elects to do any areas of Type I canal using a partial relocation approach with dewatering, the payment will be altered form Type I to Type IV work.
- The cross-section that will apply for partial relocation works is as per cross-sections within the documents but generally the top of berm is to be a minimum of 6m away from the adjacent edge of pavement. A swale is to be created approximately 2m from the edge of the road, and is to be 200mm lower than the edge of pavement. At taper sections the swale and berm will terminate as the berm tapers into the road following the alignment of the channel.
- Where partial relocation methods occur in a dewatered condition, a geofabric erosion control blanket specifically designed for such purposes to be placed and staked on the new canal side slope as per suppliers' requirements. The fabric is to be designed to protect the slope and may be biodegradable. The Contractor will be required to have the geofabric proposed to be pre-approved by the Engineer. (See C.S.P. Item re Erosion Control Blankets.)
- Ontario Provincial Standard Specification 572 also applies to this work.
- The berm may be over constructed to allow for surcharging and settlement but final grading and shaping of the berm is the responsibility of the Contractor. Should slippage occur due to construction of the berm and cause settlements, the Contractor will be responsible to re-excavate slumped materials and reconstruct the berm.
- It is required that sediments below the dyke side base and core of the berm be pushed into the centre part of the canal prior to the construction of the berm as per the recommendations of the geotechnical report.
- Any works with respect to a swale on the berm or planting of the berm will be separately measured and paid in accordance with the item.
- Surplus materials that are excavated that are not used in the berm are to be hauled away but with no separate payment.
- As per a separate item, a plastic tubing subdrain is to be placed below the swale.
- If the excavation of root masses is necessary to allow the subdrain, separate payment will be made for such.
- The initial and final grading of the backfill is to be part of this item and will not be separately measured or paid.
- The payment that is made for this type of work is to be on a per lineal metre basis and is to involve all works to create and grade the berm beside the existing dyke and to dispose of surplus excavated materials.

 

- Should further berm grading be necessary when the swale is constructed or when outlet pipes for catchbasins are placed, this grading will be part of the berm or drainage works item.

*i) Type V Canal Work (Item 7)*

- This is the transition section for the partially relocated ditch with a berm. In this ditch type the canal section gradually reduces from a Type IV to the existing section or to a section with a bottom cleanout (Type III).
- Cofferdamming and dewatering or embankment construction of the section is required.
- Slope protection of the constructed face will be necessary as per Type IV, if dewatered.
- The berm tapers are gradually to blend to the edge of the dyke. Any piling or embankment constructed for flood protection will be designated on the aerial extent of work notes.
- Most items in Type IV construction apply to this type of work.
- Due to similarity with Type I Canal work, no separate designations of Type V has been made to date and the work is shown to be Type I throughout.

*j) Type VI Canal Work (Item 8)*

- This is the cleanout work at bridges. This work is to be done at any location of a bridge crossing unless noted otherwise and/or unless a new bridge is involved.
- The bridge drawings indicate the cross-section and extent of cleanout required at each structure.
- The method to be used must be pre-approved with the Engineer. In-water work is subject to special provisions for in-water work.
- The work is to be done so that no damage to any existing piers occurs.
- The cleanout is to be a clear distance of 0.3 metre (1') from any pier or abutment.
- The materials excavated are generally to be disposed of with materials from adjacent relocation or cleanout sections. It may be necessary to load such to take to the adjacent section but this will be a choice of the Contractor and the method he selects.
- Separate measurement and payment for hauling will not be made.
- The approximate length of each bridge is noted on the drawings and the measurement for payment will be on plan quality. Adjustments will only be made where the width of bridge as measured on the deck is substantially different from that shown in the Extent of Work.

*k) Type VII-A Canal Work (Item 9a)*

- This is the canal relocation work where no berm is to be constructed and where 3:1 side slopes are involved. The drawings show where this work is to be constructed.
- The work will be constructed similar to relocation work with a future berm (Type II) and the common provisions apply. The most significant difference is that no berm will be constructed later and as a result the leveling that is done once the backfill materials are dry will be the final leveling of the backfill.
- The initial grading of the backfill is to be part of the tender but the final grading will be separately measured and paid.
- If the Contractor elects to do the work from the dyke road, the clearing along the canal dyke interface will be necessary and it will be paid in accordance with other items for clearing along edges of dyke. Where different unit prices for such clearing are evident from the tender, the most representative unit price will be used.

*l) Type VII-B Canal Work (Item 9b)*

- This is the canal relocation work without a berm where 4:1 side slopes are to be used due to the low stability of the existing soils. An attempt will be still necessary to create the littoral shelf, but the Engineer may modify or delete such in areas of 4:1 slopes.
- Similar provisions apply to this as per the Type VII-A work and the common special provisions for relocation work apply.

 

***A4 BERM WORK (Item 21)***

- Berms are required in canal relocation work wherever the existing dyke over substantial portions of its length does not provide sufficient height for flood protection.
- Generally the work is to undertaken in Intervals 1 to 4 and 16 & 17 and in part of Interval 7.
- The aerial drawings, extent of work notes plus the cross-sections indicate the locations for the berm.
- The cross-section of the berm is to be such that the top of the berm is parabolic shaped and its peak is 6m from the edge of pavement. The average top width of the berm is 2 metres. There is to be a parabolic swale approximately 2m from the edge of the pavement which is to be 150 to 200mm below the edge of pavement. Side slopes are to be 3:1 except at the peak and in the swale. The Engineer may slightly shift the top of berm offset away from the road at the time construction to recognize the wishes of the Road Authority to widen or shift the road (up to 2 metres± may be involved).
- The work involved will be to further grade the previously placed canal backfill and /or to final grade hauled, dumped and shaped materials (from elsewhere on the project) to the final shape of the berm.
- The timing of the work is to be such that the Engineer will indicate when the canal backfill is suitable for the work. Soils investigations will be necessary to verify sufficient consolidation of the backfill prior to the final construction of the berm.
- The work required by the Contractor will involve moving and reshaping of existing surcharged materials on the canal and/or grading and shaping of new materials that have been hauled in from other intervals.
- Prior to preparing the tender for berm work, the Engineer will obtain and provide cross-sections showing the existing canal backfill levels and the required final shape of the berm. The Engineer will show the approximate quantities of grading required and if any additional materials are to be graded as they are brought in but the Contractor is to make his own determination of the work.
- In general, the materials with the least organic content are to be placed adjacent to the existing dyke with the more organic materials to be placed as cover material on the outside.
- Materials hauled to and graded at berm sections during this work will be paid as per items related to hauling.
- The responsibility of the Contractor will be to ensure that the graded berm has its required shape for a period of one year from construction. If there is any settlement or consolidation of the berm within that period, the Contractor will be required to reshape the berm.
- Any necessary additional materials will be supplied at no cost to the Contractor but the Contractor's responsibility will be to grade such from the location where such are dumped.
- If any reseeding or planting is necessary, such will be remeasured and paid.
- However, where it is determined by a geotechnical engineer that the consolidation or necessity of raising the berm is due to faulty construction of the original berm, there will be no additional payment made for the seeding and planting and if there is a cost to the Board for the fill it will be charged to the Contractor.
- The Contractor of all "A" contracts, being 1A, 2A, and 3A, is to ensure that all canal backfill from adjacent excavation and that all materials hauled in from other sections of canal excavation to be used for berm construction are graded prior to leaving of the site.
- The materials shall be graded such that they do not obstruct drainage from the road and so that they do facilitate drainage to the canal.
- The grading shall be such that generally materials are left higher adjacent to the canal roads and are left closer to existing ground elevation in the portion adjacent to the new canal with some allowance for future settlement.
- Generally the least organic materials are to be graded to the area beside the dyke.
- Wherever possible, the initial excavation for the new canal is to be such that organics are spread over the entire backfilled canal to contain the sediments, and then as the bottom silts and clays are excavated, they are to be placed beside the canal roads and so as to displace the peat or organic materials that were previously placed, and to displace any of the underlying sediments wherever such is possible.

 

- In some cases where the Engineer requires the rough berm construction to be higher than the road for surcharging, openings at designated intervals must be left for drainage until the swale drainage system is constructed as part of the "B" contracts.
- As part of the "A" contracts, all berms shall be created and rough graded as part of the contract. Surcharging may be required by the Engineer. Final grading and shaping of the berm material will be in the "B" contracts.
- The Contractor involved with any "B" contracts responsible for the grading of the berm areas is to ensure that his bid price provides for any final shaping of the materials left from the "A" contracts to give the required berm cross-section as shown on the drawings.
- Where additional imported materials are to be supplied such will be supplied by the owner or are to be supplied by the Contractor with separate reimbursement.
- The Contractor will be required however to grade all materials existing or brought to the site into the berm configuration.
- It will be the Contractor's responsibility to ensure that materials are brought either by the project or by himself as required so that his operations are not impacted.
- In some cases the Engineer may require that the berm be graded at a higher level than the design level to allow for consolidation.
- The shape of the berm is to be as per the cross-sections.
- The Engineer will indicate the timing for final berm construction, considering the geotechnical engineer's advice.
- The Engineer may direct that seeding or planting on the berm occur prior to full consolidation of the berm. Also the swale, drain, catchbasins and outlets are to be constructed prior to, or during, final berm grading.
- Approximate quantities of grading per interval for berm and the approximate quantities of materials from other intervals that have to be supplied, if any, are indicated on the drawings. The drawings for the initial contract as in this report indicate the total amount of materials to be brought in and/or to be regraded. When the tender for the actual berm is prepared, a revised quantity of grading for the berms will be prepared. These quantities are provided for general information only and any use made of such will be at the Contractor's sole risk.
- The measurement for payment for berm will be per lineal metre of berm work and will be based on the plan quantities using stations from the drawings.
- Separate measurements will only be made where there is discrepancy or concern re the plan quantities.
- The payment per lineal metre is to include all work to final grade canal backfills or imported/dumped materials, to compact such, to separate organics and non-organics, and to shape such.
- There will be separate items for the planting and seeding of the berm including the shrubs on top of the berm (notwithstanding that such are grouped in the cost estimate) , and there will be a separate item for the installation of the subdrain in the swale at the base of the berm.

## ***A5 HAULING (ITEMS 11 to 13)***

- Wherever intervals require fill for berms and the intervals are ready for the fill, the materials are to be hauled and placed in such interval prior to hauling to any other sites.
- The Engineer will indicate the intervals requiring berm materials, that the Contractor is to haul to.
- Where the materials cannot be hauled as berm material, it will be the Contractor's decision as to where materials are hauled, provided possible disposal sites are designated, except where the contract documents specifically dictate the disposal site necessary.
- The drawings will indicate the locations of temporary and a permanent disposal sites that are available where the materials are not required for berms.
- Specifications also indicate the preparation and cleanup work required at any disposal site.
- Generally materials to be used for berm construction are to be less organic soils except where approved otherwise by the Engineer.

 

- The decision re timing and location of disposal where not required for berm will be that of the Contractor, subject to pre-approval by the Engineer and except where it is necessary for hauling to be done as excavated.
- Where the Engineer indicates that excavated materials are to be hauled for ultimate berm construction and the Contractor elects to supply approved imported fill for the berms and to dispose of the excavated materials elsewhere, the Engineer will allow such provided there is no increased cost to the project.
- The Extent of Work notes indicate the locations and approximate quantities of materials to be hauled in each interval.
- Regardless of where the materials are hauled to – either berm areas or to disposal sites, the bid price for hauling is to include leveling and shaping work after the materials are dumped.
- In berm areas the leveling and grading is to be such to create the general shape of the berm as noted on the cross-section and with any surcharging as directed by the Engineer.
- In disposal sites the grading is to be such as to create a uniform stockpile to the dimensions required by the Engineer.
- After materials are hauled from any area of backfilling or from a stockpile site, the site is to be graded to uniform grade and as shown on the cross-sections or as approved for a stockpile site.
- The method of hauling will be to load materials into trucks and to deliver to disposal sites.
- No separate measurement for payment will be made where the hauling is part of the specified canal type of excavation (Type III-H) and is done at the time of canal work unless noted otherwise.
- Where the hauling is undertaken after excavated materials are dry whether from on top of a backfilled canal, or from an adjacent boulevard, or from a temporary disposal site, payment will be made for the hauling. The measurement for payment will be in cubic metres and will be established by cross-sectioning the material site prior to hauling and then by cross-sectioning after hauling is complete.
- The payment is to include all work to load, haul, dump the materials and grading at the disposal site and the site from which the materials are hauled.
- If any full regrading of a backfilled canal is necessary after materials are loaded and hauled from it, and after the grading of the actual site of loading, such full regrading will be paid as part of Item 18.

## ***A6 DISPOSAL SITES FOR HAULED MATERIAL (Item 14)***

- The specifications and drawings may indicate the location of the disposal sites that may be used. The disposal sites are classified as either temporary, permanent or combined disposal sites. (None are yet indicated but a list exists of sites to be yet approved for disposal.)
- The Contractor is to prepare the disposal sites. Where the areas are wooded, clearing is to be undertaken, as a separate item, by grinding such that the trees plus the roots are ground. The materials are then to be windrowed along the perimeter of the site and then upon completion of permanent stockpiling on the site, and once the hauled materials are dried and graded, the chippings are to be graded over the materials.
- Where the site is to be used as a temporary stockpile site, once the materials are removed and hauled to their final location and this site is no longer used, the chippings are to be respread on the surface.
- The full perimeter of the disposal site is to be enclosed by silt fencing.
- Access to the site is to be as per the drawings and cleanup of the site is to be to the satisfaction of the Engineer and to the landowner. Access routes are to be maintained during use and are to be restored to existing condition upon completion of use of the site.
- Wherever the site consists of topsoils, the work is to involve similar work to the windrowing of the chipped wood, only the windrow is to consist of the stripped topsoil. Upon completion of use of the site, topsoils are to be returned and graded.
- Silt fencing is to be removed.
- Provisions for access and satisfaction of the clean up work to the Engineer apply in topsoil areas as well.

 

- External drainage to any stockpile site is to be collected by interceptor ditches and carried around the boundary of the site and then upon abandonment of the site, the intercepting ditches are to be regraded to their prior condition or as directed by the Engineer.
- Where the site remains as a permanent stockpile site, the interceptor ditches are to remain permanently.
- The interceptor ditches are to be constructed with shallow gradients, flat slopes (3:1 to 4:1) and are to be seeded. The profile of the interceptor ditch is to be continuous to minimize ponding.
- The report provides for only limited disposal sites. However, any that are designated during construction are to be prepared and paid for at the rate evident for those that are included.
- The unit price bid per hectare of disposal site preparation and restoration is to include all work re windrowing and replacing cleared materials, topsoil, drainage, access, silt fences, maintenance and restoration.
- Sign-off letters from all owners of disposal sites are required upon completion and prior to final payment under this item.
- Measurement for payment will be per hectare of disposal site approved and used.

## ***A7 PATCHING ROAD CRACKS***

- Where any construction activities occur from a paved canal road and a longitudinal crack is created due to loading of the road, the Contractor is to be prepared to retain firms experienced in such and have the crack filled with a suitable crack filler once the construction activities on the section of road are completed.
- All such road cracks shall be repaired prior to the on-set of winter.
- The costs of such crack filling will be paid by the project as long as the Engineer is satisfied the Contractor has used reasonable care when working along the dyke roads.
- If the Engineer determines reasonable care is not being exercised, and if he has advised the Contractor of such, the costs to repair damaged asphalt surfaces shall be a cost to the Contractor.

## ***A8 CLEARING FOR STOCKPILE AREAS (Part of Item 16 )***

- Where the drawings or the Engineer indicates additional areas are to be cleared for stockpile purposes, the work will involve the same type of clearing operation, i.e. partial or full grinding/mulching of all standing materials to create a wood chip base and then the windrowing of the chippings so that the excavated materials can be stockpiled/leveled on the surface of the channel area.
- Grubbing will not be necessary unless the drawings indicate that roots are to be ground simultaneous with the clearing operation.
- Measurement will be per hectare of land cleared and payment will be at the rate for clearing in areas of relocation.
- Where partial chipping/mulching methods are approved, the trunks shall be disposed of off site or shall be provided to and left for the landowner if the owner requests such.

## ***A9 ACCESS PROVISIONS (Applicable to All Items)***

- Access shall be obtained from the road allowances and from designated access routes on private lands as shown by the aerials (not all may be shown by these report drawings).
- Road Allowance Access Provisions are as follows:
  - Attend to utility locates
  - Provide construction signing to municipal satisfaction
  - Provide traffic control during use
  - Provide temporary access ramp and culverts in any ditch

 

- Culverts to be a minimum of twin 900mm dia. culverts in any channel.
- Remove access temporarily during high runoff events to ensure no flooding occurs
- Remove access at end of project and restore road boulevard by grading and seeding
- Haul away any vegetation removed
- Provide mud and dust control on road as necessary

· Designated Private Property Access
- Use routes designated on aerial unless alternate acceptable access is provided by owner
- Maximum width to be 6 metres
- Restore access to existing condition when finished
- Time use of access as requested by owner to minimize disruption
- Observe maximum speed of 10 km/hr on private routes
- Attend to mud and dust control as required by Engineer
- Remove and replace all fences to existing condition
- Maintain and close gates
- Restore/replace any damaged drainage feature

· See also CSP Items E9 and E10.

## ***A10 SOIL BOREHOLES (Applicable to All Construction Items)***

· The contract documents will include a copy of each applicable soil borehole in the area of the strip plan drawings. These boreholes are grouped in order of interval throughout the project.
· The reference to these boreholes is included on the drawings.
· These boreholes would be submitted for information only and the Contractor is required to make his own separate determination of soils type.
· The Contractor similarly is to assume all liability in using or basing his estimates on these soil boreholes.
· The Engineering report will not contain the soil boreholes but data re such is included on the profile drawings.
· A full geotechnical (soils) report is available at the Board or Engineer's office if review of such is desired.

## ***A11 MINIMUM RADII OF CURVES IN NEW CANAL CONSTRUCTION***

· New canals are to be constructed so that the radii of inside curves (at the design water edge) is 100m or greater. The outside curves (water edge again) will be 100 metres minimum plus the design water width.

## ***A12 FLATTENING CANAL SIDE SLOPES (Application to Items 2, 6, 7 & 9)***

· Where the drawings indicate that flatter side slopes are required, which at this time are indicated to be in Intervals 7 and at old river crossings, and where at the time of construction it is deemed necessary by the Engineer to have flatter side slopes, the Contractor shall excavate the channel using 4:1 side slopes.
· No change will be made in payment since the top width will not vary and generally less excavation will occur.
· Littoral shelves will still be necessary in areas of flatter side slopes except where necessary to delete in order to retain design capacity and except where it is determined that soils do not permit construction of stable shelves.
· If the canal is widened to accommodate flatter slopes as directed by the Engineer, additional payment will be made.

 

- The additional payment will be a prorating of the tender using new excavation quantity and the tender quantity. Separate and additional payment will also be made for the additional clearing. As well, landowners will receive additional and prorated allowances for right-of-way.

## ***A13 LATERAL CHANNEL TREATMENT (ITEM 26)***

- Wherever the relocated canal intercepts a lateral channel, the work required will be to salvage adequate root masses and insert these masses, trunk side down, within the bottom of the existing channel and at the elevation of the existing channel bottom such that the interface between the existing channel bottom and the new canal bank is protected. The lateral channel bottom will have to be excavated to allow placement of the root mass.
- As well, at each intersected channel, a straw bale dam is to be installed across the channel as per the appropriate detail for straw bale dams.
- These straw bales are to be maintained during the initial construction season and are to be removed at the start of the next construction season.
- In areas of cleanout, if root masses cannot be used, lateral channel treatments are to consist of barge placed filter fabric covered with riprap stone.
- Riprap is to be the width of the channel and is to extend for 1m below water.
- Alternatives to riprap with filter may be suggested for review to and approval by the Engineer.
- Straw bales would still be necessary. Recessing for the riprap would be required.
- Also at each lateral channel, and if environmental approval is obtained, a sediment holding pond upstream of the riprap or root mass is to be excavated to the same width and length as other sediment ponds in this project with disposal of the materials in the same location as canal excavation.
- Measurement for payment will be for each channel protected and is to include moving root masses, inserting them, or placing riprap on filter, placing straw bale dam and maintaining and removing the straw bale or stone dam. If a sediment pond is approved it will be paid at the rate for sediment ponds in the tender documents.

## ***A14 PROVISION OF TEMPORARY CULVERTS IN LATERAL CHANNELS DURING CLEARING OPERATIONS (Part of All Clearing Items)***

- To allow for continuation of flow in lateral channels during clearing operations and to allow access for clearing and service equipment, culverts will be required together with an embankment to allow passage of equipment at all defined lateral channels.
- The drawings may indicate the minimum end area in terms of equivalent circular pipes.
- Wherever the drawings do not indicate a minimum sizing for a lateral channel crossing, either two 900mm dia. pipes placed side by side, or the equivalent to such, are to be used.
- Where the Contractor chooses to use a span type of crossing, such is permissible provided the flow area of the channel from top of bank to top of bank is maintained.
- Where pipes are used, protection will be necessary to the embankment. Erosion control blankets (ECB) will satisfy this requirement provided such are placed tight to any pipes to minimize erosion of embankment/ramp material to the culverts and provided such are held in place by staples or other supplier approved holddowns. ECB's to be used must be approved beforehand with the Engineer.
- Upon completion of clearing operations in the interval, the culverts, their treatment and the embankment are to be removed. The embankment material may be leveled together with the chip mat from the clearing.
- Any materials in the lateral channel resulting from the embankment or clearing operation are to be removed and the lateral channel is to be left to its original condition.
- Where the Contractor requests approval to create a drive-through of a lateral channel, he will be required to submit a proposal including drawings to the Engineer as to his proposed work. The Engineer will only grant approval for such when prior approval from the Environmental agencies is

 

obtained. In water work special provisions may be necessary. The drawings must indicate how his work will maintain flows, avoid sedimentation or erosion in the channel, and how provisions to control any deposition of sediments into the channel is safe-guarded.

- Where culvert pipes are used, the pipes must be embedded a minimum of 150mm into the channel bottom to provide for continuous flow and fish passage in the channel. A minimum cover of 300mm of earth material is to be supplied to any culvert pipes. The pipes must be a minimum of 9 metres in length to avoid damage to the pipes or the channel.
- Culvert pipes may be salvaged and reused provided Engineer is satisfied the pipes are in suitable condition to provide for the flow. Where the Engineer rejects any reused pipes, new pipes are to be supplied for such.
- The Board may designate at the time of tendering if they have surplus pipes available for this purpose.
- There will be no separate measurement for payment for lateral channel crossings.

## ***A15 GENERAL FENCING PROVISIONS (Applicable to All Items)***

- All existing fences are to be noted prior to work
- Short (30m or less) or transverse cross-fences are to be dealt with as per this item.
- Where the Engineer is aware of longitudinal or paralleling fence work necessary, such are noted on the Extent of Work notes and are to be separate tender items.
- Other long and unnoted parallel fences may be paid pursuant to the Contingency Item. A fence would have to be greater than 30m in length to be paid as per the Contingency Item.
- Existing fences are to be moved wherever materials are suitable for salvage and reuse.
- Where materials are not suitable, new materials are to be provided
- Where fences will be removed to allow work, owner is to be notified so he can provide temporary fencing where necessary for access or animal control
- Upon completion of work, fences are to be re-erected to equal or better condition
- Contractor may arrange for landowner to do the work with suitable reimbursement or Contractor to retain recognized and approved fencing subcontractor to do the work
- Any new fence is to be comparable in style or type to existing unless landowner agrees to pay for upgrade
- Sign off letters from landowner re satisfaction are to be requested. Where landowner refuses to sign off Engineer will determine what, if any, further work is necessary.
- Where fence work is to be a specific item, the tender bid is to be for the work in the Extent of Work and is to be complete for the work listed in the Specific Construction Special Provision.
- Where the item is a lump sum item, and an adjustment or extension to the quantity is required, the unit price evident shall be applied proportionally.
- Other encountered lengths of fence work if and where greater than 30 metres in length (only the portion in excess of 30 metres would be paid) will be separately measured and paid in accordance with the evident unit prices for the specified fence work in the Table of Contingency Prices.

## ***A16 LONGITUDINAL COFFERDAM CONSTRUCTION (ITEM 24)***

- This project requires longitudinal cofferdams at numerous locations. Such cofferdams are required to taper relocated canals to existing structures and/or canals and in other portions to provide flood protection.
- The main types of cofferdams permitted would be interlocking sheet steel piling, earth cofferdams, geobaskets, geotubes and imported rock or rubble cofferdams.
- It is required that for whatever longitudinal cofferdam construction is proposed, the Contractor retain a geotechnical and structural engineer and provide their recommendations for pre-approval to the Project Engineer. (The trial work used both imported earth and rock cofferdams and found that such were quite acceptable.)

 

- Where a canal taper is accomplished by partial relocation methods using dewatering, native materials and slope protection, a separate item applies (see CSP A3).

*a) With respect to interlocking steel sheet cofferdams:*

- The minimum specific lengths and section modulus of steel required for permanent sheet steel cofferdams are suggested to be 12m and 3000m³/m but the Contractor is to attend to final design and approval as discussed above. The materials may be cold rolled.
- Sheet steel piling walls are to be installed by percussion methods except where the drawings specifically indicate that vibratory methods are acceptable or except where trials are successfully run with vibratory methods and the contractor's geotechnical advisors agree and advise in writing that vibratory methods may be used.
- It will be the Contractor's ultimate responsibility to use lengths and thicknesses of piling that are suitable for his purposes.
- It will be up to the Contractor to select the type of equipment to drive the sheet piles, whether it is by excavator mounted equipment (including high float excavator), conventional pile drivers, crane mounted equipment, barges carrying driving equipment or by use of temporary earth embankments for use by pile driving equipment. Standard applicable specification is OPSS 903.
- The ability to use interlocking steel may be removed in the tender call if sufficient earth materials are deemed to exist for these longitudinal cofferdams.

*b) With respect to wood or steel soldier pile (not to be used for longitudinal cofferdams):*

- Wood or steel soldier piles are not to be used as a longitudinal or transverse cofferdam construction but data is included should there be need or wish to install individual wood or steel piles for other pre-approved purposes.
- The wood to be used shall be red ash, fir, Western Red cedar or Western larch or red pine. Pile lengths are to be designed by the Contractor's geotechnical and structural engineer. The wood piles shall be treated timber Size 33 with minimum butt diameter 324mm and minimum top diameter 197mm.
- Similar notes as noted for driving sheet steel piles apply to wooden or steel soldier piles.
- For all types of backing material proposed, shop drawings and supplier's specifications are to be pre-supplied and be pre-approved.
- Where wood or steel soldier piles are permitted for use, the piles are to be driven at a spacing suitable for the backing material.

*c) With respect to earth cofferdams:*

- Earth materials capable of stability in wetted conditions are to be used.
- Materials are to be kept at the optimum moisture content.
- The material is to be placed and tamped in place by excavator buckets and tracks as much as possible.
- Upon completion it is to be covered with an erosion control blanket wherever the face will be permanently submerged or wherever the Engineer directs. The Erosion Control Blanket work is to be included as part of the Item cost and is to be in accordance with CSP Item H10.
- The product is to be stapled in accordance with the manufacturer's recommendations prior to filling the canal section. Only the portion below water level is required to have the erosion control blanket. The blanket is to be applied just prior to watering up the excavated section.
- Earth materials to be supplied and used by the Contractor for permanent earth cofferdam construction are to be preapproved with the Engineer.
- The Contractor is required to have his geotechnical engineer analyze the materials and to advise in writing that such materials are suitable for permanent earth cofferdams and that the base materials are suitable for earth embankment construction.
- Where native materials are to be used, the Contractor is to satisfy the Engineer that such materials will retain their stability with or without a geomembrane.

 

- Where earth or rock embankments are to exist as permanent canal walls, the earth or rock shall be carefully placed in order to slowly displace sediments from the location of construction.
- Samples must be submitted in advance and be pre-tested positively for pesticide and hydro-carbon contaminants and must have acceptable grain size. The Engineer reserves the right to reject any materials with unsuitable quality. If any are placed prior to analyses being completed and if the materials are found to be unacceptable, the Contractor will be required to remove such at his cost.
- Where earth is used as transverse confining cofferdams stability analyses are not necessary to be supplied for approval but quality analysis must be supplied and be pre-approved.
- Where the materials have been prestockpiled by the Board or are supplied directly to the site by the Board, the materials will be deemed to be preapproved.
- Wherever the earth materials are pre-supplied by the Board, the quality testing of the material will have been made but the Contractor is to place the material only when it is at its optimum moisture content.
- All earth cofferdams should be constructed to allow passage of excavation equipment should it be necessary to remove such due to high water flows.
- Longitudinal and permanent cofferdams are required to have minimum side slopes of 3:1.
- Excavation to deepen the existing canal at the base of a longitudinal earth cofferdam can only be undertaken when the Engineer designates and the stability of the cofferdam allows such. The Contractor is to be prepared to avoid excavating through the adjacent sediments for a period of time after the construction of the longitudinal dam and may be advised to leave this final excavation until conditions of excavation are suitable.
- The Contractor is advised that where longitudinal earth cofferdams are constructed above sections of canal with substantial sediments, the earth cofferdam is to be over-constructed sufficiently in width to allow a 3 metre berm at the base and to allow that when the underlying materials are excavated to the final 3:1 slope, the 3:1 slope will continue up the full height of the new cofferdam.

*d) With respect to imported rock or rubble cofferdams:*

- The materials to be used must be free of any deleterious substance. The source of the materials is to be preapproved with the Engineer and the Engineer has the right to reject any materials that he feels would be unacceptable for use in open water. The materials are to be placed to create a sufficiently stable cofferdam that is capable of withholding the earth placed behind without excessive seepage through the dam.
- Where unacceptable seepage may occur, the Contractor is to supply a synthetic geomembrane material on the upstream wall of the cofferdam or in the centre portion of the cofferdam. All rock or rubble cofferdams are also to have a geosynthetic filter fabric base underlay designed and placed for such purpose.
- The Contractor will be required to have geotechnical and structural analyses prepared and pre-approved including quality analyses of the rock or rubble and specific recommendations for any filter fabric underlay.
- Separate payment for filter fabric material will not be made.
- Similar provisions regarding excavating at the base of an earth longitudinal dam apply to rock or rubble cofferdams.

*e) With respect to geotextile baskets or geotextile tubes:*

- The Contractor is to submit for pre-approval the geofabric basket or tube that is proposed to be used and is to provide sufficient documentation from the supplier to indicate that such use is a permissible use for earth cofferdam construction.
- The geobaskets or tubes are to allow for native material usage to ensure the maximum disposal of on-site materials.
- The Contractor must also supply for preapproval his method of placement of any tubes, filling and lifting any baskets and for providing stability as adjacent canal bottoms are excavated.

 

- Supplier's catalogue or specific information is to be submitted and is to address reaction to ultraviolet rays, reaction to total submersion, reaction to sharp objects that could be embedded in or lying on the canal bottom and recommendations with respect to stacking, twinning and adding rock for embankment type of construction to allow construction equipment crossing.
- Any damaged baskets or tubes that constitute permanent walls must be repaired or replaced within a two year warranty period.

*f) With respect to underlays:*

- The Contractor shall supply and install geosynthetic underlays below a cofferdam wherever the material to be used requires an underlay as per the suppliers or Contractor's Geotechnical Engineer's recommendations. Where the project requires an underlay, such is indicated in the Extent of Work.
- All rock or concrete rubble cofferdams will require the underlay.

*g) Water filled baskets or tubes may only be used for the transverse and temporary cofferdams at bridges:*

- Sufficient information must be supplied from the manufacturer and/or the Contractor's Geotechnical Engineer to indicate such will be suitable for this project.
- All recommendations so supplied are to be followed.
- The water tube must be removed and relocated as needed.
- Water baskets cannot be used as permanent longitudinal or transverse cofferdams.

*h) Measurement and Payment:*

- For longitudinal/permanent (perimeter and/or exposed) cofferdams measurement for payment will be per lineal metre of cofferdam.
- The payment is to include all work to prepare the canal bottom, the geotechnical and structural reports, any floodproofing, any surface or underlay fabrics, the supply and placement and any replacement required.
- Transverse cofferdams for temporary canal confinement are separately discussed.

## *A17 TRANSVERSE EXCAVATION/CONFINING COFFERDAMS (Part of All Excavation Items Related to Relocation)*

- This report requires each section of canal that is relocated to be done in sublengths of up to 1000m in length, depending on individual irrigation, lateral channels and communal irrigation.
- The Contractor may choose to use shorter sublengths but the mandatory locations indicated for cofferdams must be implemented.
- At the end of each excavation length, a cofferdam is to be constructed across the existing canal to confine the backfill placed in the canal.
- The height of the cofferdam shall be set based on the cross-sections included which indicate the height of backfill in the existing canal. The cofferdam shall be to this elevation or higher as necessary to confine the backfilled materials.
- The method of constructing a cofferdam shall be by using imported earth with a significant content of clay or using imported 150 to 200mm gabion stone. Any other method such as interlocking steel sheet piling, or by using geofabric baskets or tubes or by using aquadams will require preapproval by the Engineer and the Contractor will be required to show how he will provide for the Emergency Plan (during high flow periods) and for access to work areas.
- If rock is used for excavation cofferdams, a geotextile underlay shall be placed prior to the cofferdam.
- Each rock or earth cofferdam is to be constructed of such width to allow equipment passage. Excessive widths are not allowed since maximum space is to be available to dispose of excavated materials.
- Rock or earth or geofabric cofferdams may remain in place.

 

- Earth or rock cofferdams shall be constructed by starting at the existing dyke and placing new material adjacent to the existing dyke so as to push sediments away from the dyke. The centre portion of the cofferdam shall be constructed first so that sediments are also pushed laterally away from the material.
- The dam shall be constructed such that some compaction is applied by use of excavation buckets and excavation tracks.
- Construction shall be at a reasonable speed of approximately 50 to 60 cubic metres of material per hour to allow for compaction and displacement of sediments.
- After construction of the confining cofferdams, the Contractor shall allow a minimum period of two days to allow for fish catching before any canal construction work occurs.
- If steel transverse cofferdams are used, the Contractor will be required to supply a shop drawing to show how he can cross the existing canal to remove such and/or to move equipment during flood events. If not removed they shall be cut flush with the required finished grade or lower as designated by the Engineer. Aquadams must be removed. All piles are to be placed by percussion method, except where Contractor conducts a trial section to show vibratory methods will create no problems to the satisfaction of the geotechnical engineer.
- There shall be no separate measurement for payment of transverse confining cofferdams. These are to be included in the price per metre of canal construction and on the assumption the earth or rock to be used has been stockpiled by the Board or is brought to the site where needed by the Board. Any hauling required by the Contractor from the Board's stockpile site will be separately paid.

## ***A18 FLOOD PROOFING LONGITUDINAL COFFERDAMS (Part of Item 24)***

- Wherever an earth or rock cofferdam is constructed that is required to provide flood protection, that portion of the cofferdam above the adjacent dyke and for a depth of 1 metre below the dyke must be flood proofed.
- The method of flood proofing is to either use a 3m wide minimum clay core with 1:1 slopes or to use a pre-approved geotextile membrane that is specifically fabricated to provide flood proofing.
- The membrane is to be secured at the top of the berm by flapping over the top (within 150mm of the top) and down one side so a minimum paralleling embedment of 1 metre is provided.
- The lower portion is also to be placed a minimum of 1 metre below the level of the adjacent road and the material membrane is to be extended a minimum of 1 metre in a horizontal direction.
- A similar but alternate method of placing the membrane is to place such as an inverted U where the inverted base of the U spans the top of the cofferdam, with some cover, and the sides of the U extend a minimum of 1 metre below the adjacent dyke road elevation.
- There will be no measurement for payment since the cofferdam will be measured and paid and since the specifications will indicate if the dam is to provide flood proofing and since the flood proofing will only be necessary where unsatisfactory (re flood proofing) earth materials are used or where rock is used.
- It is anticipated that most cofferdams or berm if constructed of imported clay or of native excavated silts will not require flood proofing.

## ***A19 DYKE REPAIR, RAISING AND/OR WIDENING AREAS (Items 23a and 23b)***

- Wherever the drawings indicate that existing sections of dykes require repair, widening and/or raising or where the Engineer requires such, the Contractor is to use granular (Item 23b) or non-organic earth materials (Item 23a), where such exist, and is to reconstruct the dyke to ensure that a minimum top width of 5m exists and is to grade the side of the dyke to a slope of 2:1 and is to provide the required top elevation.
- No seeding is required on the dyke but where chipping (clearing) operations are undertaken, the chippings are to be used to surface the reconstructed dyke.

 

- The earth materials are to be placed in 600mm lifts and are to be compacted by track equipment..
- The clearing will be part of the canal work and also the excavation and placement of the material will be part of the canal ditch type work. The clearing specifications indicate the chipped materials may be applied to the finished dyke as a mulch.
- The approved materials for dyke construction are to be benched into adjacent sections of dykes that remain as per OPSD for benching embankments.
- The elevation for the top of the dyke is to match the existing dyke at either end and where such does not exist, the profile drawings will indicate the elevation of the required dyke.
- The minimum cross-sections for the work is shown on the detail on the drawings.
- The unit price evident per lineal metre is to include grading the placed materials, the compacting, the benching into existing dykes, the blending to driveways and lawns and the grading of wood chips on the surface.
- This work is separate from the required work to just restore existing dykes (see CSP E8).
- The work shall also be undertaken to recognize any utility lines and to minimize removal of any trees or branches that do not otherwise have to be removed. Where such are to be trimmed to avoid breakage, cutting close to trunks or feed branches shall be done and the materials shall be hauled away. Separate payment for such clearing will not be made.

## ***A20 MOVING/DISPOSAL OF DEBRIS, JUNK, OLD VEHICLES, ETC. (General Construction)***

- Wherever any small structures, appliances, old vehicles or debris piles, etc. or similar exist in an area of leveling in a cleanout section or in an area of clearing and/or excavation for relocation, the landowner is to be advised that such structure, vehicle, equipment, etc. is to be removed beyond the work area and if the landowner does not move such, the Contractor is to relocate such outside of the area to be used for leveling, for any windrow stockpile area or for clearing or excavation for new canal work.
- The relocation shall be made to minimize damage to the item(s) being moved but shall be consistent with the type of equipment available on site to move such and as a result more damage may result and will be tolerated.
- No additional payment will be made.

## ***A21 SUCTION DREDGING (Part of Items 1 to 9)***

- Where the Contractor proposes an alternative means of excavation using suction dredging, details of the proposed work are to be pre-submitted and approved with the Engineer.
- Generally suction dredging methods will only be allowed provided all other environmental requirements of the project are recognized, provided the materials are suitably disposed of, provided no increased costs are occasioned to backfill an existing canal, provided no damage occurs to adjacent lands or roads and provided additional containment is supplied to contain the more liquid backfill.
- The Contractor will assume full responsibility for any damage to his equipment in using the suction dredging procedure due to decaying wood particles in the sediments.
- There will be no alteration in the payment per metre of ditch type. Any payment made shall provide for all requirements as part of the particular canal work associated.
- The Contractor will be responsible, at his cost, to supply and place additional materials to backfill any canal to the limits shown by the cross-sections should insufficient material result due to suction dredging procedures.

 

## *A22 MAINTAINING COMMUNAL IRRIGATION INLETS AND LATERAL CHANNEL OUTLETS DURING CANAL EXCAVATION (Part of Items 1, 2, 6, 7 & 9)*

- The Contractor will be required to carefully select his locations for transverse confining excavation cofferdams that isolate sections of canal being improved or relocated wherever communal irrigation inlets and lateral channels are intercepted.
- The drawings indicate the mandatory locations of transverse cofferdams. (See Drawings 4 to 14 Volume 3)
- It is required that a cofferdam be located to one side of any communal irrigation inlet or lateral channel outlet so that the inlet or outlet is maintained and allowed to function while work proceeds on the opposite side of the cofferdam section.
- Work is to be done such that the lateral channels may be given an outlet in the completed section of canal upon completion of the work in the first cofferdammed section.
- Similarly, the communal irrigation inlet is to be relocated to the completed canal prior to the commencement of work in the next section of canal.
- This will ensure continuation of lateral channels and communal irrigation inlets.
- Where irrigation is not occurring at the time of canal work as agreed to by the Engineer, this requirement will not be necessary for communal irrigation inlets.
- There will be no separate measurement for payment for this item.
- Where scattered below grade suction or sub-irrigation lines exist, the Contractor is to attempt to also locate his transverse cofferdams at these locations but it is recognized that not all below grade lines can be so accomodated.

## *A23 ADDITIONAL MATERIALS FOR BERM CONSTRUCTION*

- Where the adjacent canal backfill does not generate sufficient materials for the berm, surplus materials from other intervals and to be hauled and used.
- These materials may be materials that are hauled once excavated and that are placed in a rough graded condition until dry and then later graded into a berm or they may be materials that have been previously excavated and stockpiled and are in a drier condition.
- Wherever possible, materials with low organic content are to be used for berm construction.
- Where imported materials are proposed for use, and the concept is approved by the Engineer in advance, a geotechnical analysis of the material must be supplied and approved in advance to show that the material is clean, environmentally acceptable and suitable for berm construction.
- There will be no payment for additional materials since separate payment for hauling will be made and if imported materials are required and used either the Contractor is to absorb the cost of such if it is his decision to use such or the Board will arrange for the supply of such.
- There is to be no increase in cost to the project by using imported materials when compared to the cost to haul and place existing on site materials.
- The cost of supplying and grading of materials for berm construction is to be either part of payment for hauling or for berm grading and seeding.

## *A24 PARTIAL OR TRENCH DEWATERING (Common to All Excavation Items)*

- Wherever partial dewatering is undertaken to either control water levels in the excavation trench (pond) or where done in areas of partial relocation, pumps that are used must be operated to reduce sedimentation.
- The inlet in the area being pumped from must be protected by placing the pump in a stone bedding and backfill and protected with filter fabric.
- The discharge for the pump must be either into a sediment pond with straw bales or is to be through sediment bags. If sediment bags are used, they are to be continuously inspected and cleaned.

 

- Any costs for pumping in excavation trenches and/or in partial relocation areas are to be included as part of the canal work involved.
- Monitoring of turbidity and water quality are to occur throughout the period of dewatering.

## ***A25 POSTING OF CANAL RE SNOWMOBILES/WATERCRAFT***

- The Contractor will be required to place pylons and warning/closed signs at 300 metres and 50 metres each way of a cofferdammed work section to caution snowmobiles and other wheeled vehicles of closed sections.
- Similarly anchored bouys are to be placed in non frozen conditions to warn of closed sections ahead.

## ***A26 EMERGENCY WORK (Common to All Excavation Items)***

a) High Flows

- If during the construction, high runoff events are anticipated, the Contractor will be required to implement the provisions of the Emergency Plan which is attached hereto.
- This plan requires careful filling up of the excavation trench, excavation of temporary notches and removal of transverse cofferdams and then removal of turbidity curtains to allow continuous flow through this section of canal under construction.
- Separate payment will be made for implementing emergency provisions.
- All reasonable hours and rates will be paid for work to open up the canal and then for the work to restore cofferdams, close notches and continue on.
- Payment will not be made for stand-by charges during the event.

b) Accidents

- If an accident should occur on a canal road adjacent to the work activity, all works must cease. The Contractor is to assist in mitigating the immediate situation, is to supply and place pylons that he has available and is to provide traffic control.
- These provisions will apply regardless of whether the accident is due to the Contractor's activities or it is unrelated but in the area of the Contractor's work.
- The Contractor is to notify the project engineer or his staff and is to notify other contacts on the emergency contact list in the Spills Response Plan.
- Payment for such measures will only be made when the Engineer feels such are justified.

## ***A27 SNOW AND ICE CONTROL (Common to All)***

- Whenever excessive snow or ice occurs, the provisions of the Weather Plan are to be implemented.
- These provisions will include protecting materials that are to be used, removing ice as necessary to allow work, plowing snow and stockpiling such as necessary and to suspend work in significant situations.
- The Contractor's operations are always to ensure that municipal snow plowing and sanding equipment can operate along the canal roads when such are open to one or two lanes of traffic.
- The Board will attempt to have closed roads plowed and sanded provided the Contractor attends to mud control. However, the final responsibility for snow plowing and sanding of closed roads will be that of the Contractor.

## ***A28 FENCE WORK ON TUNNO***

- A fence existed along the outside edge of the canal across the length of the Tunno property (500m± long) being Parcel 144-800 in Lot 14, Concession 2, King Township.
- This fence has been relocated as part of the emergency clearing work undertaken.
- The cost to relocate the fence is part of the costs for the Emergency Work contract.

 

### *A29 FENCE WORK ON RANJIT*

- A chain line fence exists along the east limits of the Ranjit property from the building south to the canal. This fence will be intercepted by the partial relocation of the canal in this interval.
- The new work required is to construct a similar 1.5m high vinyl coated chain link fence, if the owner wishes, from the existing fence westerly along the north side of the right of way along the canal to the termination of the lawn area of the property.
- The work to be undertaken is to supply and place chain link fence complete with top rail and bottom rail and brace posts.
- The fence is to be a vinyl coated chain link fence and is to be approximately 1m north of the north bank of the canal.
- The fence work is to be undertaken by a Contractor experienced in chain link fence construction and the work is to be guided by OPSS 541.
- The fence work will be separately measured and paid.

### *A30 USE OF TRUNKS AND ROOT MASSES FOR CANAL CONTAINMENT*

- As noted, the Contractor may use excavated root masses and tree trunks that remain from the clearing operation to create a berm along the interface between the new and existing canal to better contain excavated materials that are placed in the existing canal.
- These root masses and tree trunks are to be placed initially or are to be adjusted at the completion of work so that they are not above the required final elevation for canal backfill as shown on the cross-sections.
- Generally the final grades for canal backfill adjacent to the new canal are to be equal to the ground levels prior to construction with an allowance for consolidation as indicated by the Engineer.
- Any trunks or root masses that protrude above backfill upon final grading are to be sheared, cut and/or disposed of off site or at a location approved by the Engineer.
- Any individual tree trunks placed are to be secured or protected from floating away.
- Any that do float away are to be retrieved and dealt with.

### *A31 STOCKPILING EARTH FOR COFFERDAMS*

- The Contractor is advised that he should made necessary arrangements for stockpiling of suitable imported earth for cofferdam construction where the Municipality/Board has not been able to separately stockpile such.
- The Engineer will designate sites that are available.
- The Contractor will be required to provide evidence that the materials brought in are free of unacceptable pesticides and hydrocarbons.
- If there are any costs re the supply of the earth, the project will pay such costs.
- Any costs of preparing disposal sites will be paid in accordance with the tender item.
- Any costs of hauling from the stockpiling site will be paid.

## B) ENVIRONMENTAL

### *B1 TURBIDITY CURTAINS (Item 10a)*

- A turbidity curtain is required at a maximum distance of 15 metres from each transverse/confining excavation cofferdam.
- These turbidity curtains are to remain in place during construction of the section of canal confined by the cofferdams and are then to be moved as required when the work extends further with new sections.

 

- Turbidity curtains are also required at a spacing of 300m in any section of canal cleanout and are to be moved when canal excavation approaches within 15m of the turbidity curtain.
- Turbidity curtain locations are to be carefully considered with respect to lateral channels and communal irrigation inlets.
- The specification for turbidity curtains is OPSD 219,260 and 219.261 and OPSS 577.05.02.04.
- The Contractor will be required to supply catalogues, brochures, suppliers' information for pre-approval of the turbidity curtains he proposes.
- The curtain must be capable of passing residual base flows in the canal but at a depth below the surface.
- There shall be no separate measurement for payment for turbidity curtains.
- The supply, removal, relocation, cleaning, replacement of turbidity curtains shall be part of the per metre cost of canal excavation type.
- Turbidity curtains shall be replaced whenever it is evident that the curtain has been damaged or that it is clogged by sediments.
- Each time a turbidity curtain is relocated, it is to be inspected by the Engineer to confirm that such may be reused. It shall be cleaned prior to any relocation.
- Where a turbidity curtain remains in place for more than two weeks it is to be inspected for damage and or clogging and any necessary cleaning or repair is to be undertaken.
- Best management practices for turbidity curtains are to be observed.
- All turbidity curtains are to fully cover the canal and are to be secured to trees, stakes or other to prevent dislodging with flows.
- The supply and installation of turbidity curtains may be deleted from the tender call and may be attended to by the Board. If so, a separate special provision will be issued.

## ***B2 SILT FENCES (Item 10b)***

- Silt fences are required throughout on this project on the outside and paralleling edge of canal relocation.
- Silt fences are also to extend along the edge of any intercepted lateral channels.
- The drawings do not indicate specific locations for silt fences. Such are to be installed to parallel all lengths of canal relocation, whether full or partial.
- Silt fences are not required in areas of canal cleanout.
- The specification for silt fences shall be as follows:
  OPSD 219.110 (light)
  OPSS 182
- There shall be no separate measurement for payment for silt fences. Such are deemed to be a necessary part of any canal type of construction. Such shall be placed also at any other location where the Engineer deems that the construction methods could cause silts and sediments to enter a watercourse or worked field or lawn area.
- Best management practices included within this report for silt fences shall also be reviewed and observed.
- Applicable OPSS and OPSD provisions shall be observed.
- The need or usefulness of silt fences on this project is currently being re-evaluated and such may be deleted in some or all locations, prior to the tender call.

## ***B3 FISH RELOCATION (Item 10g)***

- As has been indicated, each work area of canal relocation once cordoned off by transverse cofferdams, is to be left for a period of 2 days ± to allow for others to electroshock and move fish in the interval.

 

- The Contractor will be required to provide scheduling as to when others should be on site to undertake fish shocking and he is to co-operate with such others.
- He is to ensure that a ramp is left at his cofferdams to allow entry of the boat used for fish shocking or he is to be prepared to hoist or lift the boat in and then out of the particular canal section.
- The fish shocking work will involve passage over the cordoned off existing canal, the shocking of water, catching the fish and releasing such on the downstream side of the turbidity curtains at either end of the interval to be worked on.
- Fish shocking is to occur until the number of fish shocked and moved in each pass of the electro shocker reduces and stays at a low number compared to the initial shocking events. In most instances it is anticipated that two days of shocking will be necessary.
- If significant fish are in the interval, it is possible that a third day may be involved and the Contractor is to be prepared to have such occur.
- Once the fish shocking work is completed and the Contractor has commenced excavation on the adjacent new canal and the backfilling of the existing canal, if any fish are noted in the canal being filled, he is to either catch such using a fish net and transfer them into open areas of canal. Operations do not have to be suspended for this activity.
- A best management practice for fish shocking is included.

## ***B4 DEEP POOL EXCAVATIONS (Item 10h)***

- At designated locations in full relocation intervals, 200m long sections of the bottom are to be overdug by approximately 1m (to elevation 215.1±).
- At these deeper areas of excavation littoral shelf construction will not be required.
- The purpose of the deep excavation is to provide varied fish habitat.
- The excavated materials are to be disposed of in the same manner as other excavated materials.
- There will be separate payment for deep pool construction. Measurement will be per each area of deep pool location and the payment will include excavation and disposal for the full length of disposal.
- The location of deep pools may be shown on the drawings.
- Where the Engineer determines soils are not suitable for a deep pool location as shown on the drawings, he reserves the right to direct the Contractor to construct such where soils are more suitable. All final locations for deep pools are to be approved or directed by the Engineer.
- The approximate numbers of deep pool excavation are included with each interval.
- The excavation quantities shown in the contract drawings or estimate do not include the additional excavation required at deep pools.

## ***B5 LOG BUNDLES OR ROOT MASSES (Item 10d)***

- This work is indicated by a detail on the drawings and is required at approximately 200m spacings along the littoral shelf.
- For log bundles the work will involve lashing together 6 to 7 tree trunks, 4 to 5m long with a cable
- Variety in the log bundles is desirable. Logs should not lie parallel to each other but have large spaces between them for fish access.
- All logs placed must be secured by cable or chain to pins or steel posts to be driven into the sides of the shelf to prevent floating or washing away. Alternatively the log bundles may be lashed to adjacent trees.
- Prior approval of the log bundle construction proposed is required.
- Root mass placement may be done in lieu of log bundles at most locations.
- The work re root masses will involve excavating the root mass with an erect 1m long trunk and then inverting the root mass in the littoral shelf.

 

- Combinations of an inverted root mass and log bundles is required. In every 1000m length of canal, the mix could be 4 root masses and 1 log bundle.
- The location of the log bundle/root mass is to be as close as possible to the outside edge of the littoral shelf.
- Where approved, and at a scattered spacing, a full tree of appropriate size may be used as the log bundle/root mass.
- The measurement for payment of root masses/log bundles will be per each constructed.

## ***B6 ROOT MASSES FOR WILDLIFE HABITAT ENHANCEMENT (Items 1, 2, 6, 7 & 9)***

- The project requires that at scattered intervals, a root mass or bundled trunks (a log bundle) remaining from the clearing operation shall be placed in the adjacent wooded areas for wildlife habitat enhancement.
- The method of placing such root mass or trunks shall be by excavator and such that damage to remaining standing trees does not occur. The approximate frequency of placement of the root mass and/or trunk into adjacent standing trees is approximately 1 per 500m of length.
- The root mass must be outside the 3m maintenance width but need not be any further.
- There shall be no separate measurement for payment of such work. It is to be included in the per metre cost of canal work.

## ***B7 MACROPHYTE (NATIVE) TRANSPLANTS (Item 10f)***

- The work in this type of fisheries habitat enhancement will involve digging up plants native to the canal from yet unexcavated sections and transplanting these to the area of littoral shelf construction.
- The work is anticipated to be done by others and will not form part of the tender.
- The frequency of such transplants is every 600± metres on the shelf. Each transplant area is to be 25m² in size.

## ***B8 GRAVEL SUBSTRATES (Item 10e)***

- This project requires in designated locations which are generally at close proximity to access points, the construction of 30m long gravel substrate areas on the littoral shelf. The substrate areas may be constructed up to one year after initial construction of the littoral shelf.
- The substrate area is to consist of graded gravel, 75mm maximum size and is to be placed to a thickness of 300mm, to a width of 2.5m and for a length of 30m. It is anticipated that this gravel is to be brought to the site by barge type of equipment and unloaded accordingly.
- Measurement for payment will be for each gravel substrate area constructed.
- The payment is to include preparation of the shelf and supply and placement of the gravel.
- The work may be deleted from the contract and done by the Board.

## ***B9 SPECIAL PROVISION FOR IN-WATER WORKS (Part of Items 1 to 9)***

- Where in-water work is permitted using high float excavators or excavators operating from barges the following special provisions shall apply.
- A written proposal to do such must be pre-submitted and approved.
- Fuelling is to be undertaken in designated locations prior to entry into the water
- Biodiesel fuels are to be used
- Biodegradable hydraulic fluids are to be used
- Daily inspection of fuel and fluid lines are required and prior to entry into the water
- Two types of fuel spillage kits are to be on site (35 L oil only spill kits, and sorbent booms and net pillows)

 

- All in-water work areas for excavation must be delineated with turbidity curtains.
- Double turbidity curtains are required at each end of a section where in-water work occurs.
- Full restoration of all access is required
- A safety and spill response training course must be completed by all operators of in-water equipment
- See also the Fuelling and Spill Response and Prevention Plans.

## ***B10 FUELLING (General to All Items)***

- Fuelling plans shall be provided and be pre-approved. The Environmental Fuelling Plan included with these documents must be incorporated in the Contractor's fuelling plan. The Best Management Practice sheet for fuelling, attached, shall also be considered.
- The following general special provisions shall apply to fuelling stations:
  a) The area should be desirably 15m (50') from any canal or water channel.
  b) The area should be desirably bermed to confine spills
  c) The ground should be desirably relatively impervious
  d) The area shall have convenient road access
  e) Spill cleanup kits shall be available at the site
- The preferred method for fuelling equipment remote from the dyke or canal roads is to use clay or rock for the transverse cofferdams and to then cross over the cofferdam to the dyke/canal road for fuelling.
- The fuelling on the dyke or canal road shall consider the requirements herein for a fuelling station.

## ***B11 SPILL RESPONSE PLAN INCLUDING SPILL CONTAINMENT KITS (Applicable to all Construction Items)***

- The Contractor shall comply with the Spill Response and Prevention Plan contained in these documents.
- Spill containment kits are to be equal to that in the Spill Response Plan.
- Two sets of each kit are to be on site at all times.
- The Contractor and his equipment operator are required to attend a spill prevention and response course to be paid for and arranged by the Board and at a local site arranged by the Board or in the Contractor's trailer.
- The course may involve up to approximately 4 hours.

## ***B12 EXCAVATION SEDIMENT PONDS (Item 10c)***

- This project requires that each sublength of canal relocation (maximum 1000m long) must have a corresponding sediment pond constructed through which displaced water from the canal being backfilled must pass.
- The sediment pond is to be constructed within the corridor for the new canal and may be constructed in the area of the littoral shelf to minimize separate excavation.
- The facility is to have an average length of 16m and an average width of 8m and a depth of 1 metre.
- Shallow channels from the section of canal being backfilled to the pond and then from the pond back to the section of canal downstream of the transverse/confining cofferdam shall be provided to allow for flow of displaced water.
- The depth of the shallow channel shall be 100mm± above existing canal water levels (at both inlet and outlet) so that as water levels rise due to displacement, the waters pass through the connecting length into and out of the sediment pond and so that downstream canal waters do not run back into the pond.
- Desirably a low gradient should be provided.

 

- The grades and elevations shall be so as to prevent backflow from the downstream canal into the channel.
- The sediment pond shall be maintained, from time to time, to be free of sediments and continuous review and maintenance of such is required.
- Excavated materials from the sediment pond shall be placed in the canal being filled in.
- Two separate rows of straw bales shall be placed in the channel downstream of the sediment pond. A minimum of three bales per row shall be used and such shall be embedded and staked in place as per the Best Management Practices for Straw Bales enclosed herewith where practical.
- In winter conditions an alternative to straw bales is to be developed.
- The channels leading to and from the pond shall have an approximate bottom width of 1 metre and be parabolic shaped.
- The best management practices for sediment ponds and straw bales included herein shall be considered and applied in sediment pond and straw bale construction where practical.
- There shall be separate measurement for payment for sediment ponds, and such is to include the straw bales and the connecting channels.

## ***B13 LITTORAL SHELF (Part of Items 2 and 7)***

- The purpose of the shelf is to create a varied habitat area for fisheries.
- The cross-sections for this project indicate that a 2.5 to 3.0m wide littoral shelf is required in all sections of relocated canal. This shelf is to be approximately 1 metre below the average water level and is shown to be at elevation 217.75.
- The shelf shall be 3m wide in the north canal and 2.5m wide in the south canal.
- It is recognized that this shelf will be the “best effort” possible by the construction equipment in use and the stability of this shelf will be monitored during construction.
- The design of this shelf may be modified depending on soil conditions that are encountered but such modification is only to be done after necessary discussions have occurred with the Engineer and environmental consultant and with DFO where substantial changes are required.
- Where existing soil conditions do not allow the littoral shelf construction as proposed, after substantial efforts to construct such, the Engineer may delete its requirement or may modify the shape or size of the shelf. It is anticipated that in peat soils with little solid or root content, construction of the shelf may not be possible.
- Where the shelf is excavated in silt or clay soils or other non-organic materials, it shall be excavated 50 to 75mm deeper and organic materials shall be backdragged or otherwise placed on it.
- There will be no separate measurement for payment for littoral shelves since they are to be included with the main canal excavation items.
- Also in areas of deep pool excavation, littoral shelves are not required.

## ***B14 DUST CONTROL ON EARTH/GRANULAR DYKE ROADS (General Item 1)***

- Wherever excavation, hauling or other works occur along an earth or granular dyke road, the Contractor will be required to ensure that daily dust suppressant measures are applied, unless in the opinion of the Engineer, due to condition or location, dust suppressant is not required on the particular day.
- Materials for dust suppressant will be paid at the unit price evident from the Form of Tender and is to be payment in full for supply and application.
- Weigh tickets will be required weekly for supply of dust suppressant.

## ***B15 MUD CONTROL (General Item - Common to All)***

- Wherever a Contractor’s operations involve work on a dyke road, and as a result of the operations earth, peat or other material creates a mud surface on the road, the Contractor is to, at the end of each

 

day, have a loader or similar equipment on site that is capable of removing the majority of the mud from the road.
- When a particular section of canal work along the road is completed, the Contractor is to hire a firm that specializes in washing and brushing the road, and is to clean such to the satisfaction of the Road Authority.
- Separate payment will not be made for mud control. Such is to be part of the work item involved.
- All operations of mud control must be such that the removed mud is deposited in the backfilled canal as opposed to on the inside marsh lands.
- Monitoring of weather will be critical to ensure mud control is attended to prior to freezing conditions or extremely wet or hot conditions.

## ***B16 NOISE MEASURES (General Item – Common to All)***

- The equipment used by the Contractor on this project are required to have mufflers and other attachments that minimize noise to customary noise levels for such equipment.
- Wherever the Engineer deems that satisfactory noise attenuation devices are not implemented on the equipment, the Engineer may require the Contractor to provide such.
- The guideline will be industry standard and if any debate exists, the Engineer will retain a firm specializing in noise matters to provide the ultimate decision.
- The items dealing with noise in the Best Management Practices component of this report are also to be implemented and these include ensuring hours of operation are observed and compliance with municipal noise bylaws.

## ***B17 GRASS BUFFER STRIPS (Item 47)***

- This specification applies to those locations where the documents require grass buffer strips to be created along the outside edge of the new or existing canals.
- The work will involve initially the regrading of the lands to an elevation as directed by the Engineer. In some cases, these elevations will be slightly higher than existing to create a small berm to control runoff into the canal.
- The grading work will involve work by dozer with any materials necessary either being imported or exported from the canal excavation.
- Once rough grading is completed and the materials are dry, final grading is necessary and then the area is to be seeded.
- The report is set up that the project will supply the seed and then the necessary seeding is to be undertaken by the Contractor.
- Initial watering will be necessary by the Contractor and thereafter if further watering is necessary, such will be done at the cost of the project as per the item for watering or will be assigned to the landowner with compensation.
- In some instances this item may be deleted and the landowner will be retained to construct, seed and maintain the buffer strip.
- Where the Contractor is to attend to the grading and seeding of the buffer strip, the landowner is to make an access available to the Contractor. Each landowner is to make one access available.
- The seed and any fertilizer and/or mulch is to be provided by the Board and is to be a seed equivalent to what is used on channel banks and berms and is as specified in CSP C4.
- All access routes are to be kept graded during construction and are to be restored to equal or better condition at completion.
- All work is to be reviewed with landowner prior to start of, and at end of, construction.
- Letters of acceptance are to be obtained from the landowner or acceptable reasons for not obtaining such are to be provided.

 

- If no specific or modifying notes are included re the grass buffer strip, the Contractor's tender is to be prepared on the basis he attends to all work (excluding the supply of the seed) but including the grading of a berm and his tender is to be prepared on the basis the landowner makes an access available.
- Buffer strips may be deleted in whole or in part and be attended to by the Board.
- All work will be paid on a per square metre basis and will include all work except for supply of the seed (and fertilizer) and is to include access, preparation, materials, grading, installation of seeding and initial watering.
- Measurement will be made of each area as approved and constructed in place.

## ***B18 SPECIES AT RISK (Common to All)***

- The Contractor is notified that continuous monitoring of the work site will be undertaken by the Engineer and/or his environmental subconsultants with respect to identification and protection of any species at risk.
- Such species at risk may include fisheries, plants, birds and/or wildlife.
- In the studies completed to date, only two potential areas of species at risk have been noted. One is the existence of red dace fish in the Kettleby Creek tributary which is a cold water stream, and also one Butternut tree which was found in Interval 16. The latter was found to be diseased however and is able to be removed.
- Should any species at risk be noted during the construction, the Engineer may require the Contractor to suspend his activities in the area of such species at risk until suitable mitigation has been provided.
- Where the Contractor is required to suspend his activities and where he is unable to move to an adjacent area for work immediately, stand-by payments will be made.
- If the Contractor is able to move early to an adjacent area, no additional payments will be provided.
- If the work must be altered due to the species at risk, the Engineer will negotiate payment for such modifications on a time and materials basis.

## ***B19 FIRST NATIONS ARTIFACTS AND BURIAL SITES (Common to All)***

- The Contractor is also advised that monitoring of the site will be undertaken to determine if there are First Nations artifacts or burial sites. To date, none have been noted.
- If any artifact or burial site is encountered, similar provisions with respect to encountering a species at risk site will be applied for the construction work.

## ***B20 MAINTENANCE OF HAUL ROUTES (Common to All)***

- Wherever the Contractor is required or elects to haul materials either to berm areas on the north canal or to stockpile sites, the provisions of this report with respect to traffic control, mud control, dust control, and noise control apply to the haul routes.
- The Contractor is to note and observe any specific requirements of the Road Authority with respect to loading of the road and traffic provisions.
- The work involved with maintenance of haul routes includes but is not limited to daily removal of mud, flushing and sweeping of roads at the end of use, provision of construction warning signs, provisions of pylons and flagmen where required, observation of noise control measures, provision for dust control, provisions for snow and ice control, maintenance of local traffic, maintenance of routes for farm traffic, and protection of any temporary irrigation lines.
- There will be no separate measurement for payment for these measures.

 

### *B21 EROSION CONTROL BLANKETS (Part of Item 24 )*

- Erosion control blankets or approved equal are to be placed along the bank of the new canal where imported fill (longitudinal cofferdam work) constitutes the majority of the bank.
- Since the slope is 3:1 and the bank is located in an area with a low flow velocity and in an environmental sensitive area, a biodegradable double net straw erosion control blanket is required.
- This product must be laid on the bank of the canal and anchor into place using the standard Surelock 15cm wire staples. The staples shall be installed according to the manufactures (DOT System) staple pattern. The blankets should over lap each other by 0.10m.
- An acceptable product is SC150BN by North American Green and can be purchased through Armtec or Coldstream concrete.
- Other approved equivalent products will also be considered by Engineer. Approval must be obtained prior to ordering/construction.

### *B22 MISCELLANEOUS ENVIRONMENTAL PLANS*

- The Contractor is advised that the following environmental plans are appended to the contract documents and they are to be considered.
  - Sediment sampling and monitoring plan
  - Fueling plan
  - Spills prevention and response plan
  - Emergency plan
  - All-weather plan
  - Accidents/malfunctions plan
- Some have already been referred to.

## C BERM WORK

### *C1 BERM GRADING, SEEDING AND PLANTING (ITEM 21)*

- This item work is to include the grading/shaping of, seeding of and planting or berm construction adjacent to an existing dyke.
- Once grading and compaction is satisfactorily completed to the cross-section shown and to the engineer's approval, then seeding is to occur on that portion of the berm evident from the typical drawings.
- Then a planting consisting of small shrubs is to be undertaken along the top of the berm.
- The grading work for the berm is to ensure that a portion of the materials that are graded have an organic content to facilitate seeding and plant growth.
- The measurement for payment will be in lineal metres of berm construction. The payment is to include the grading and compacting of the earth materials, the grading for and the planting of the seed and shrub material.
- The tender documents will indicate which components of this item will be deleted and attended to by the Board and which parts may be separately tendered.

### *C2 HAULING ADDITIONAL MATERIALS FOR BERMS (Part of Items 11 to 13)*

- Wherever the Engineer determines that additional materials are required to complete the final shaping of the berm, he will authorize such in accordance with either Item 11, 12 or 13 or he will have such additional materials hauled in by the Board.
- In either manner, the firm hauling the materials will be required to rough grade the materials as part of the hauling costs.
- The Contractor's work for shaping the berm will then occur after the materials are placed.

 

## *C3 SHAPING CANAL BACKFILL (Part of Item 21)*

- When these documents indicate that the canal backfill is to be graded and shaped for berm construction, this is the work either after the hauling, dumping and grading of fill from other areas, or after the grading of the canal backfill in the previous contract where additional fill is not necessary.
- The shaping work required with respect to this berm item will be to use equipment to create the berm shape indicated on the drawings. This will involve grading of the canal backfill and grading of the berm itself.
- The work is to be such that the initial berm is over-constructed to allow for surcharging.
- It is anticipated that a minimum of 150mm of surcharging of the berm will be required.
- The additional surcharge will be accommodated by steepening of the back slopes of the berm.
- The final shaping work is to be such as to leave the berm ready for seeding and planting. Planting is to be done by others on the crest of the berm and seeding is to be undertaken from the crest of the berm to the swale along the canal road edge.
- Seeding is not required at this time on the back slope of the berm. Should such be authorized, additional payments in accordance with the contingency sum for seeding will be made.
- The grading is to be undertaken as soon as the materials are sufficiently dry in the engineer's opinion that grading may be undertaken. The Engineer may require geotechnical analysis of the base material for the berm prior to the work being allowed.
- New materials placed in the berm are to be compacted by track equipment. The Engineer will make the determination as to the acceptability of the compaction effort.
- There will be no separate measurement for payment of shaping as this is to be included in either the hauling item or in the Berm Grading, Planting item.

## *C4 BERM SEEDING (Part of Item 21)*

- Upon completion of the shaping of the berm to the satisfaction of the Engineer, seeding of the berm is to be undertaken.
- This work is to be conducted by a firm experienced in seeding and is to involve the application of an approved seed.
- The seed mixture is to be 45% creeping red fescue, 50% Timothy clover and 5% clover Alsike and is to be applied at a rate of 150 lbs per acre. Also mix in 1 – 25 lb of barley per 150 lbs.
- It is possible that the seeding work on this contract will be removed and attended to by the Board directly.
- The measurement for payment will be part of Item 21 which is on a per square metre basis.

## *C5 BERM PLANTING (Part of Item 21)*

- This report requires the provision of plants along the crest of the berm, or to the outside of the crest where approved by the Engineer, once the construction and shaping of the berm is approved.
- The purpose of the plant is to create a root mass in the berm which will facilitate and add strength to the berm. The plant is also to provide an aesthetic attribute to the berm and for this reason, variety of plants for berm planting will be required.
  The plants to be installed are to be native plants and are to be planted by a firm specializing in such.
- The density of the planting is to be one plant per 1.5 metres. The plant is to be a minimum of 200mm in height at the time of planting. Staggered rather than continuous row planting is required.
- The species to be used for the berm planting are to be submitted to and confirmed with the Engineer.
- Variable spacing and density may be required considering the plants to be used.
- The planting will be removed from the contract and will be attended to by the Board when it is deemed appropriate.

## *C6 ROADSIDE SWALES (Item 20)*

- Wherever the drawings require a new berm to be constructed beside an existing dyke, a graded swale must be constructed between the existing dyke and the new berm.
- The swale profiles will be provided at the time of construction but are to be approximately 150 to 200mm below the average edge of dyke road. The swales are to be constructed using granular materials to a depth of 200mm or as otherwise specified by the Engineer and are to blend to granular road shoulders and earth berm.
- A cross-section for swales is included with the drawings. In general the swale is to be 1 metre wide, saucer shaped with a bottom width of 0.5m at the tubing location.
- A 0.6m asphalt apron is to be constructed in the swale at any catchbasin locations as part of the catchbasin item. It is possible that these swales may be ultimately paved when and if the adjacent road is reconstructed but such is not part of the tender.
- To ensure drainage is provided until such time of pavement, a 150mm slotted plastic tubing is to be placed below all swales as part of the swale construction cost. The tubing is to be installed approximately 400mm below the swale and a detail for the tubing is shown on the drawings.
- The tubing is to be perforated plastic tubing and is to be installed with crushed stone bedding and backfill and with a filter wrap (not a supplier's sock on the filter)
- The berm is to be pre-constructed and compacted prior to excavation for the subdrain.
- The swale is to be finally graded after installation of the tubing.
- The applicable OPSS 405 and OPSD 207.041are to apply.
- The unit price per metre for the swales is to include the excavation and disposal, the granular, the supply and installation of a tubing below the swale the filter wrap and the final grading.

## *C7 SUBDRAINS (Part of Item 20)*

- The work involved for a subdrain is to trench the swale constructed along the edge of the canal road at the base of the new berm and to install a perforated agricultural tubing of 150mm diameter.
- The work is to be undertaken such that a clear, crushed stone bedding to a depth of 100mm is first placed, then the tubing is to be placed on a filter fabric. The filter fabric is to run continuously and then is to be wrapped over the tubing once placed. Then the tubing is to be backfilled with additional stone to cover it by a minimum of 100mm.
- Grade is to be controlled by laser control.
- The trench is then to be backfilled with free draining (native if available) materials.
- The surface is to then be graded to fit the grade of the required swale.
- The tubing at upstream ends is to have a cap added to it and at downstream ends it is to be joined to catchbasins.
- The joining of the tubing to catchbasins is either to be included as part of the tubing work or as part of the catchbasin work.
- The agricultural tubing to be used is to be that supplied by Big O or equal and is to be fabricated and suitable for agricultural drainage use.
- The filter fabric is to be a filter fabric design to protect against fine soils entering drainage piping. Pre-approval of the filter fabric to be used must be obtained from the Engineer.
- The stone to be used is to be 5/8" or ¾" clear crushed drainage stone.
- Measurement and payment will be per lineal metre of subdrain and will be payment in full for trenching, disposal, supply and placement of stone, tubing filter and backfill, plus grading and connections.

 

## *C8 SWALE CATCHBASINS (PART OF ITEM 27)*

- At locations designated on the drawings, a 600mm diameter plastic catchbasin or a 600 x 600mm precast concrete catchbasin as supplied by Coldstream Concrete Ltd. or equivalent is to be constructed.
- The catchbasin will not be constructed until the berm and swale is constructed or under construction.
- The catchbasin is to have a 300mm sump and is to have a traffic proof grate installed on it.
- Any plastic catchbasin material is to be constructed out of high density polyethylene materials and is to have an equivalent base. Granular backfill is recommended to avoid Contractor returns to repair settled earth backfill.
- The grate is to be secured to the catchbasin by approved holddown devices. Marker stakes (as supplied by the Board) are to be placed in the adjacent berm.
- Shop drawings for the catchbasin and the grate proposed is to be submitted and pre-approved by the Engineer.
- The catchbasin may incorporate the backflow preventer (but ideally a separate catchbasin/ manhole is to be provided for the backflow preventer) and if such is proposed to be incorporated in the catchbasin, a shop drawing is to be submitted for pre-approval.
- A 0.6m wide asphalt apron (HL3 – 50mm thick) with 250mm of compacted Granular A base is to be provided at each catchbasin.
- The measurement will be for each catchbasin and the payment is to include excavation, disposal, placement, backfill, connections, grate, markers, holddowns, asphalt apron and restoration.

## *C9 CATCHBASIN OUTLETS (PART OF ITEM 27)*

- The outlet for each catchbasin is to consist of 250mm diameter plastic solid tubing as supplied by Big O or equivalent (perforated with a sock) and is to extend from the catchbasin through any berm to the new canal edge.
- The materials are to be shallow buried in the canal backfill (300mm± min. cover) and are to be given a continuous gradient from the catchbasin to the canal edge.
- The special provision for gradings across canal backfill for piping is to apply. After grading is completed the tubing is to be placed on wood pallets or equivalent.
- It is recognized that across the canal backfill the maximum gradient possible will be in the area of 0.1%. See detail on drawings. Laser grade control will be required.
- Marker stakes (equivalent to catchbasin marker stakes) are to be provided at each outlet pipe at the canal edge and on the edge of any berm to indicate the location of an outlet pipe.
- Careful tamping of backfill to the pipe where it passes through the berm area will be required.
- The outlet of the pipe is to consist of a 6m length of 300mm dia. high density polyethylene piping or corrugated steel pipe complete with the rodent gate. (The pipe diameter shall be larger if necessary to accept the 250mm tubing.)
- The outlet pipe shall be secured by steel posts or approved equal to prevent dislodging with flow.
- The 250mm tubing shall be inserted 600mm into the pipe and the joint shall be wrapped with filter fabric.
- Each outlet shall be 1m from the edge of the canal bank to prevent cleanout or ice damage.
- The canal bank shall be suitably excavated to the outlet.
- A freeboard of 300mm shall be provided below the outlet pipe.
- The measurement will be for each outlet constructed and it is to provide for the pipe, the pallets, the marker, the installation and the outlet plus rodent gate.
- For estimating purposes, an average length of 28 metres is to be assumed. Some will be longer but some will be shorter. No adjustment will be made in payment for shorter or longer pipe.
- The Contractor will be required to inspect and regrade as necessary each catchbasin outlet at the end of the one year warranty period.

### *C10 BACKFLOW PREVENTERS*

- Each length of outlet pipe is to have a backflow preventer.
- Possible methods of backflow are conventional flapgate, a product entitled Agri Drain Check Valves or equal or a custom design product.
- The Contractor will be required to submit shop drawings and have such preapproved prior to usage of the backflow proposed. The backflow preventer is not to interfere with the continued operation of the rodent gate.
- Where in line check valves (such as Agri-Drain's product of equal) are proposed, a separate catchbasin manhole is to be provided to house such. The manhole may be of similar constriction as the catchbasin but is to have a manhole grate which is secured to the basin but which is easily opened for inspection.
- The catchbasin manhole shall be of sufficient diameter or size or have ladders or rungs to allow access to inspect or replace check valves.
- The valve, if it is Agri-Drain's product or equal, is to have a cleanout and is to be connected through the catchbasin using SDR 75 PVC pipe which is clamped to the plastic tubing inside of the catchbasin.
- A detail of a possible check valve is included.
- Measurement for payment will be for each preventer supplied and installed and is to include payment for any catchbasin, grate, cleanout, piping, installation and maintenance during the two year warranty period.

## D IRRIGATION

### *D1 IRRIGATION GENERAL (TYPES A TO F)*

The eight broad types of irrigation inlets that exist and that have to be considered are:

- Above grade installations that cross through the dyke in sleeves. The irrigation pipes in the sleeves normally vary from 4" to 6" diameter (Type A). The sleeves vary from 6" to 15" and are primarily corrugated steel pipe culverts.
- Small diameter irrigation pipes that cross through the dyke above grade without sleeves (Type B). These are primarily 2" diameter and are either iron pipe or plastic.
- Below grade small diameter pipes, again in the magnitude of 2" diameter (Type C). Most are iron pipes and are joined to jet pumps on the marsh side. These lines are designed not to freeze.
- Below grade suction lines which are normally in the magnitude of 4" to 6" diameter (Type D) and are iron pipe.
- Sub-irrigation/communal lines which are below grade and are gravity fed and vary from 4" to 6" (a few 8") for sub-irrigation (Type E) and 10" to 14" for communal lines (Type EC).
- Recently extended below grade suction lines through Highway 9 with 16" sleeves (Type F) (Extended when Highway was reconstructed in 2002±).
- Over the top systems in those sections where the dyke is not used as a road. In these intervals, the landowner brings a portable pump to the dyke, installs his inlet and then removes all at the end of the irrigation period (Type G which is called a variation of Type A, specifically Type A6, in these sections).

### *D2 IRRIGATION GENERAL (MISCELLANEOUS)*

General requirements with respect to irrigation:

- The Contractor is to discuss each irrigation line with each landowner, and with the representative of the Drainage Superintendent and the Engineer present whenever possible, all landowner

 

requirements regarding permanent and final irrigation prior to the Contractor commencing work in a particular area.

- He is to retain a firm specializing in irrigation to attend any meetings with himself and the landowners, to ensure that the irrigation requirements can be addressed.
- The Contractor will be required to take all measurements necessary for ordering of materials.
- He is to allow the Engineer to GPS all irrigation systems.
- He is to ensure that all pipes placed below roads have caps.
- He is to ensure that clay bases are constructed for all below grade irrigation lines so that such may be readily used as soon as canal excavation and backfilling in a section is completed.
- He is to co-ordinate all excavation and backfilling activities to recognize the sub-irrigation and communal lines that exist to ensure that wherever possible such may continue during excavation and canal activities. Where it is uneconomical to ensure that sub-irrigation lines continue during canal excavation activities, the Engineer may approve the temporary sealing off of sub-irrigation or below grade suction lines during the canal excavation.
- The Contractor is to be aware that where contingency prices and unit prices tendered for specific items of irrigation work differ, and where an item of work is attended to in any interval that may be jointly covered by a contingency price or a bid price for a similar item in another interval, the lower of the two prices will be used for payment.
- With respect to the provision of platforms for above grade lines in peat backfills, the pallets to be used may or may not require floatation inserts.

## ***D3 IRRIGATION TYPE A-2 to A-5 WORK (ITEMS 33 TO 36) (STEEL PIPING COMPONENTS)***

- In this irrigation work a new 100mm to 300mm steel pipe is to be installed across the dyke road and berm area if any for irrigation purposes.
- The majority of the work to be done for Types A-2 to A-5 will be the same but the different classifications are used for billing purpose. Only A-4 work is slightly different due to the need to supply irrigation piping also.
- The steel pipe is to be Schedule 40 galvanized pipe and is to be supplied in such lengths that welding is not necessary, for most installations, if a crossing of a dyke/road only is involved and so that only one weld is necessary where a dyke/road and berm are to be crossed.
- The pipe shall be clean and free of damage.
- Upstream ends are to have a low cost cap or plug while the downstream end is to have a flanged Bauer by Vandenbusshe (or equal) assembly with a cap.
- The pipe is to be installed by open cut procedures as per the cross-section prepared for such.
- Restoration of the dyke road is to be attended to as per the cross-section and as described herein:
  - Any asphalt is to be sawcut.
  - Granular materials may be saved and reused but other material is to be disposed of in canal or berm backfill.
  - New granular A is to be supplied as bedding and backfill and is to be compacted.
  - A minimum of 50mm of HL3 asphalt is to be placed and compacted as the surface on paved roads.
- The elevation of the dyke crossing is to be set or agreed to by the Engineer after confirmation of utility elevations and so that a slight (minimal) downslope is provided from the marsh lands through the dyke road and/or berm to the canal (½" per 10 feet±).
- The desirable minimum depth (cover) below the road is to be 500mm. The minimum length of pipe is to be such that 9m exists on the upstream side (except where landowner requests less) measured

 

from the edge of pavement where the lands are graded gradually and 0.5m minimum from a steeper embankment and such that a minimum of 0.5m protrudes through the dyke or berm.

- All dyke crossing minimum lengths are listed on an interval by interval basis
- Where berms plus dykes are involved, again minimum lengths are listed on an interval by interval basis.
- All junctions in steel pipe are to be welded in accordance with CSA Standard W59-M1989 procedures.
- Where greater lengths of pipe are required, the additional length is to be welded to the required minimum length or where the minimum lengths are to be shortened appropriate and approved cutting procedures are to be used. Payment for greater lengths will be per metre as per the table of contingency/provisional prices.
- Laser grade control is required.
- Minimum trench widths are to be so as to accommodate plate, or other approved, compactors.
- Temporary caps at the marsh side ends are to be supplied and attached to prevent damage or clogging at ends until pipe is used by landowner.
- Wherever possible existing lines across the road shall be removed and disposed of off site or given to the landowner (if he or she requests) all as part of the excavation to place the new pipe. Such may remain only if preapproval is given. Where it remains, it is to be sealed.
- Pipe in berm areas is initially to be laid on pallets (with flotation inserts if necessary) and to the required grade.
- The landowner is then responsible for the placement and protection of the pipe and alteration of any of the pallets.
- Prior to construction of any berm the Contractor is to verify grades of pipes or supports and correct any deficiencies.
- Berm construction methods are to recognize the existence of the steel piping.
- The Contractor is also to monitor and correct any grades after final construction of the berm for a period of one year. Thereafter it is the landowner's responsibility.
- All new steel pipe ends on canal side are to have a flange attached and are to be supplied with an aluminum flanged section that can be secured to the pipe flange. The aluminum flange is to be short and is to have a Bauer (or equal) assembly connection. The cap to be supplied is then to be such that it caps to the Bauer assembly. Chains or other approval methods of securing the cap assembly to the aluminum extension are to be supplied so the cap is not misplaced.
- Where landowner does not wish the assembly unit, such may be replaced with an alternate connection mechanism if approved by the Engineer and with an alternate approved end cap.
- Connections on the landowners' side are to be attended to by landowner.
- For Type A3 work the flanged Bauer assembly and cap may be replaced with an alternate cap and assembly system that still facilitates the canal inlet piping and that ensures the cap is chained or otherwise secured to the piping to allow it always to be available.
- Any alternative is to be pre-approved by the Engineer.
- Measurement for payment will be for each crossing and for each diameter of Type A2, etc. irrigation line supplied and placed. The payment is to include supply of all materials, the excavation, removal and disposal of the old pipe, sawcutting, utility exposure, traffic control, material disposal, bedding, backfill, compaction, asphalt restoration, cutting, welding, grade control and end work. Approximate average lengths required per interval are shown in the Form of Tender. Type A4 piping is to include the aluminum extensions.

## ***D4 SUPPLY AND INSTALLATION OF ALUMINUM IRRIGATION TUBING (PART OF TYPE A4 AND A6 WORK) (Items 35 & 37 )***

- Wherever the drawings require the placement of irrigation tubing (to extend a new irrigation pipe that has been installed across the road and/or berm), Type A4 work, piping that is commonly used for

 

irrigation piping (mostly aluminum and as supplied by Vandenbussche or equal) shall be supplied and placed.

- Wall thicknesses are to be as per the following table:

**ALUMINUM TUBING (IMPERIAL)**

| Dia. | Wall Thickness | Length |
|---|---|---|
| 4” | 0.050” | 30’ & 40’ |
| 6” | 0.058” | 30’ & 40’ |
| 8” | 0.072” | 30’ & 40’ |
| 10” | 0.094” | 40’ |

- The piping shall be placed on an evenly graded section of canal backfill with slight downgrade to canal and shall extend from the end of the 200mm (8”) or other diameter piping material that has been placed or that is existent to the edge of the canal.
- Wood pallets with buoyant materials attached or equal are to be supplied, installed and placed to grade to support the aluminum piping.
- Suitable materials for coupling to the end unit of the steel piping shall be supplied. Such coupling material is to be the male portion of a Bauer suction assembly (or equal) as supplied by Vandenbussche or equal.
- Suitable clamps for joining any tiger flex or equal piping extensions to the tubing at the canal edge shall be the landowner’s responsibility.
- The work is to include preparing the canal backfill base for the aluminum piping (and the laying of the piping on buoyant wood pallet material or equal but only if needed immediately).
- Where the piping is supplied for Type A6 work only the aluminum piping and a plug or cap for both ends of the aluminum piping is necessary. The base preparation and pallet work would be necessary.
- Where the piping is not required at the particular time of season, the piping is to be provided to the owner on the marsh side of the dyke road but the base preparation including pallet work is to be attended to.
- There will be no separate measurement for payment since the work re aluminum piping is to be included as part of the A4 or A6 work tender.
- Should additional piping be necessary, the table of contingency prices for irrigation will apply.

## ***D5 GRADING ACROSS CANAL BACKFILL FOR NEW ABOVE GRADE LINES (Part of Items 33, 35, 36, 37 & 38)***

- This is not a separately measured and paid item but is work that is to be included with well outlet extensions, drain extensions and where irrigation lines have to be extended.
- The work is to involve grading of the canal backfill to the required elevation and to the required width.
- The excavated materials from any grading or trench are to be leveled on adjacent portions of the canal and are to be graded to blend in.
- One option for the bed to be created to supply and place clear crushed stone that is graded away, compacted as much as possible and then is to have loose materials placed on such and graded to receive the pipe.
- The other option is to supply and place wood pallets or equal with buoyant material attached and that are leveled to the required grade.
- The cross-section for any such bed where the piping is to remain exposed is to be such that maintenance equipment may pass easily through the bed area after the piping is removed.
- Where the piping is to be covered, the excavated material shall be carefully placed back over the new pipe, shall be tamped in placed and shall be graded.
- Marker stakes are required at canal side and dyke side ends of all bed areas.

 

***D6 SUPPLY AND INSTALLATION OF STEEL RATHER THAN ALUMINUM PIPING TO EXTEND NEW ABOVE GRADE IRRIGATION ROAD CROSSINGS TO CANAL EDGE ( TYPE A4 WORK)***

- Where the project or the Engineer at the time of construction requires steel piping (rather than aluminum irrigation tubing) to extend an irrigation line to the new canal, piping equivalent in diameter and strength to that supplied across the road shall be supplied and installed.
- The work is to include preparing the canal backfill including the supply and installation of a bouyant base as required for aluminum piping.
- The work may involve trenching of the backfill first so that the buoyant base and pipe may be covered over.
- A Bauer type connection or equal as for Type A2 to A5 work is to be supplied at the new canal edge that can be easily removed to allow the owner to attach and use his inlet piping if the steel piping extension is welded or flanged to the road crossing piping. If the extension is secured to the road piping only when in use, the Bauer assembly on the road crossing will be sufficient but it must allow for easy connection of the steel pipe extension. Alternatives may be accepted provided such are pre-approved and provided such provide for easy use of the cap.
- All tenders shall be based on the supply of elbow sections of steel piping if necessary together with welded or flanged joints to make any connection to the new dyke or berm crossing.
- Measurement for payment will be at the contingency rate for the increased cost in excess of aluminum piping per lineal metre of piping supplied and installed and the work is to include the supply of all material including the assemblies, the preparation of base, the laying, backfilling and the connections.

***D7 OPEN CUTS FOR ABOVE GRADE IRRIGATION LINES ACROSS EARTHEN DYKE (TYPE A2 TO A5 WORK) (Items 33 to 36 Where Specified)***

- Where on the project an irrigation line is to be placed across an earthen dyke rather than an asphalt dyke, this special provision will apply.
- The work will involve an open cut trench, the preparation of the cut for the irrigation pipe, compacting of the base, the installation of the steel pipe and the backfilling of the earth crossing, together with compaction of such and the restoration of the surface.
- The measurement for payment is to be per crossing installed, depending on pipe diameter.
- The minimum length of pipe involved will be the length identified in the interval and is to be supplied in no more than 2 lengths to minimize number of welded joints. Desirably the pipe is to be supplied in one length. If additional pipe is required, it will be paid at the Table of Provisional or Contingency price. All other work is to be as indicated by C.S.P. D1)
- The tender form will indicate where the work is to be across an earthen dyke versus an asphalt dyke.

***D8 SEALING EXISTING IRRIGATION SLEEVES (ITEM 30)***

- This work is involved wherever an existing irrigation sleeve is abandoned and replaced by new piping but the old one is not excavated out, with the Engineer's preapproval, as part of the new work.
- Wherever possible the old sleeves are to be removed as part of the installation of a new sleeve. However, wherever the existing sleeve cannot be removed, it is to be sealed.
- The method of sealing such is to supply and place ready mix concrete in the existing sleeve to a minimum protrusion of 900mm at each end.
- A tight fitting steel or equal cap is to be secured to the sleeve upon completion of the concrete additive.
- The concrete is to be of a sufficient slump that it remains intact when placed and should be of such slump that it can be inserted by ramming such in place.
- Any option to the use of ready mix concrete must be pre-approved with the Engineer.

 

- Measurement for payment will be per each sleeve so sealed and is to include the supply of the materials to seal it, the placement of such, and the capping of the pipe once the sealant material is in place.

## ***D9 INDIVIDUAL REMOVAL OF EXISTING SLEEVES***

- Where it is mandatory that an existing sleeve be removed rather than be sealed, and/or where such removal is not part of the installation of a new sleeve, the work will be separately measured and paid.
- The work will involve saw cutting the asphalt, trenching the road, salvage and replacement of existing and supply of new material so that a minimum of 250mm of Granular A exists, and with restoration of the road using 50mm of compacted hot mix asphalt (HL3).
- The work will also include disposal of the existing materials and the restoration of the shoulder portions of the road to existing conditions. Granular A material is to be used on shoulder.
- Compaction of all granular materials by track equipment is required.
- Where the pipe extends beyond the shoulder, the portion beyond may be left in place but it shall be sealed as described in CSP Item D6.
- Measurement for payment will be for each pipe removed and will be for all work.
- Payment will be made at the contingency rate tendered.

## ***D10 POWER PRIMERS (Item 32)***

- Wherever the documents indicate that a power primer is to be supplied, the power primer is to be a portable sealed unit equivalent to Hale Model ESP as supplied by Vandenbussche or equal (self lubricating).
- Power primers will only be considered in areas of full canal relocation.
- Power primers are to be delivered and unloaded at a location as required by the landowners.
- Measurement for payment will be in units of power primers supplied and will be payment in full for supply, delivery and unloading. Connections and grading are to be the responsibility of the landowner.
- Where, and if indicated, supply of power primers may be supplied by the Board.
- The Board and/or Engineer will indicate who is eligible to receive a power primer but generally one power primer would be supplied to each irrigating canal side landowner regardless of the number of properties owned. Where the landowner owns multiple pumps, more than one power primer per owner may be made available.

## ***D11 BACKFLOW PREVENTION ON IRRIGATION LINES (CAPS, CAPPING PLATES OR PLUGS) (Item 31)***

- Wherever a new 100mm or larger irrigation line is constructed or remains across a dyke, the line is to be served with a cap, plug or capping plate.
- CSP Item D1 for Type A2 to A5 work describes the Bauer assembly type caps to be supplied and installed unless options are submitted and approved.
- This item therefore primarily applies to sleeves that remain in Type A3 work.
- For sleeves that remain in Type A3 work other types of separate caps or capping plates are to be supplied.
- Any cap or plug is to be secured to the discharge/canal side end of the pipe by means of a chain or equal to prevent vandalism or loss of the cap or plug.
- If the Contractor proposes an alternate type of mechanism to ensure the cap is retained adjacent to the pipe when not in use, the Engineer will consider such.
- It may be necessary for the Contractor to weld a bracket to which any chain or other method of securing the cap is attached.

 

- The cap is to be designed such that it contains a compressible "O-ring" type of gasket or equivalent to make a secure connection when used.
- If a plug is used, the plug is to be designed such that easy turning of the screw is possible. Handles/levers are to be attached to the screw to facilitate turning.
- Caps for corrugated steel pipe sleeves that remain in cleanout areas are to be designed and installed to work with the corrugated steel pipe.
- Shop drawings for caps or plugs are required and are to be pre-approved by the Engineer.
- Capping plates are to be used for existing sleeve crossings that remain in cleanout sections and where the landowner's irrigation pipe remains inside the sleeve that is retained.
- A detail for a typical capping plate is included with the drawings but the final selection/design is to be by the Contractor and is to be shown on a shop drawing and such shop drawing is to be pre-approved by the Engineer prior to any such usage.
- It is suggested the Contractor construct and apply a prototype prior to producing numerous caps or capping plates.
- The Engineer reserves the right to reject any constructed or supplied cap or capping plate, even if shop drawings for such were pre-approved, where in the opinion of the Engineer the cap or capping plate does not address the necessity of preventing backflow and/or where the device is unworkable by a landowner or has inadequate provisions to guard against loss or theft.
- Measurement for payment will be in units of caps or plugs or capping plates supplied and installed and will only be done for pipes or sleeves that remain across a dyke.
- There will be no separate measurement for payment for caps or plugs on newly supplied pipes below a dyke (Type A2 to A5 work).

## ***D12 IRRIGATION TYPE B2 (Item 38)***

- In this item black polypropylene tubing (hereinafter called black poly) is to be used to extend small diameter above grade lines to the new canal.
- Wherever up to 75mm (3") black poly piping is required, the materials are to be Oil Creek Poly as supplied by Vandenbussche or approved equal.
- Upgrades or Tigerflex tubing as supplied by Vandenbussche or equal are possible where landowner agrees to pay for increased cost.
- Couplings are to be aluminum cam and groove with gear clamps.
- Tigerflex couplings are to have spiral double bolt clamps.
- Couplings of the material itself are to be avoided wherever possible.
- Black poly is to be supplied as one length wherever possible.
- The length is to be sufficient to allow placement into the canal.
- A temporary end cap is to be supplied to keep the pipe clean until used.
- The materials are to be laid on a bed or in a trench prepared to accept such as per above grade or below grade specifications herein.
- For above grade lines the pipe shall be laid on pallets with flotation as necessary and to a uniform and slight downgrade to the canal.
- Thereafter any protection, burial and relaying is to be by the landowner.
- The inlet work including screens, flotation markers, etc. is to be by the landowner.
- Marker stakes are to be installed at the outlet and at the edge of the dyke road. The Board will supply the marker stakes.
- If the existing piping extends through a sleeve below the dyke road, the annular space is to be sealed (CSP D14) as part of this item.
- Measurement for payment will be per unit of 50mm or 75mm black poly line supplied and placed. The payment is to include supply of all materials, excavation, bed preparation, bedding, backfill compaction, connections, sealing annular spaces where required, grade control and temporary end protection.

 

- Minimum lengths are to be installed as listed on an interval by interval basis but are to allow sufficient extension into the water to allow use of the line.
- If the Engineer requires a sleeve material to be supplied and placed to receive the black poly, separate measurement and payment will be made for the supply and installation of the sleeve material.
- If greater lengths of black poly are required, payment will be per metre as per table of contingency prices.
- In this work, the actual piping across the Canal Road will remain unless the landowner requests it to be reconstructed at his cost.

## ***D13 SLEEVES FOR ABOVE GRADE SMALL DIAMETER IRRIGATION LINES***

- This special provision will apply where the landowner requests and/or the Engineer indicates that a sleeve is required for small diameter irrigation lines, being 50 to 75mm black poly.
- The sleeve is to consist of steel channel or beam section or may involve 150mm diameter steel piping.
- All the costs quoted for this item are to be based on steel channel sections with dimensions of 250mm x 89mm with wall thickness of 4.93mm or 150mm dia. structural steel piping with 9.5mm wall and with 350 mpa steel (CSR640.21)
- Lengths are to be welded
- Separate unit prices are to be tendered for supply of beams or channel sleeve versus 150mm diameter pipe sleeves in accordance with the Table of Contingency Items..
- The pipe sleeves are to be structural steel and are to be supplied in sufficient lengths that minimum welds are necessary.
- All sleeve material is to be capable of carrying construction traffic loading and to protect the piping.
- Stamped engineering shop drawings for the material proposed are necessary to verify such can carry equipment loading without damage to the irrigation line.
- The measurement for payment will include the supply of the sleeve, the excavation or placement of the sleeve, the placement of the small diameter line on or through the sleeve, and the backfilling of the sleeve.

## ***D14 GROUTING ANNULAR SPACES (Part of Item 38)***

- Where an existing sleeve remains across the dyke/road and a smaller line extends through the sleeve and to the canal, or where a new 200 to 250mm (8” or 10”) steel pipe is installed as per Item D1 specifications and a smaller plastic line is then placed by the landowner through the new steel pipe to extend to the canal, the annular space is to be sealed or grouted.
- The materials acceptable to grout the space are to be an approved anti-shrink material that can be removed if necessary. The Contractor’s selection of materials are to be pre-approved with the Engineer.
- The extent/depth of sealing is to be as per supplier’s recommendations.
- If the Contractor is able to offer an alternative to placing an anti-shrink grout in order to seal the annular space, such may be considered by the Engineer.
- The Engineer reserves the right to reject any anti-shrink grout, even if such is pre-approved if it is found that the material does not produce a satisfactory result. If such determination is made, the Engineer may require any annular spaces that have been grouted with the material to be regrouted with new and acceptable material.
- It is recommended the Contractor construct a trial grouting prior to ordering and use of large quantities of grout in annular spaces.
- Where the grouting is necessary at a new A2 to A5 crossing due to the landowners usage of small piping through the new steel pipe, the Bauer flanged assembly will not be necessary and may be deleted. The Contractor should confirm with each landowner where the new piping may be used as

 

sleeve rather than as an irrigation line prior to ordering the pipe so as to avoid ordering the flanged Bauer assemblies.

- There will be no measurement for payment will be per each irrigation line grouted, regardless of size since the work to prepare the pipes for grouting and to supply and place the grout is to be part of CSP No. D1 and D12 (Items 33 to 36 or 38) where required.

## ***D15 SUPPLY AND INSTALLATION OF SMALL DIAMETER BELOW GRADE IRRIGATION PIPING (TYPE C WORK) (Item 39)***

- This special provision applies to all below grade irrigation lines which are in the magnitude of 50 to 75mm in diameter and which are to be extended to the new canal below grade.
- Prior to ordering and installing any piping or tubing the Contractor shall confirm with landowner and Engineer the material type and size required and clamping to be used.
- The Contractor may elect to extend such pipes prior to backfilling of the canal or after completion of the canal work.
- The work is designed to involve constructing transverse clay cofferdam bases, excavating in such, placement of carrier steel beams, sleeve pipes or channel sections with excavated trench, and then the supply and placement of black poly material to extend the existing irrigation line.
- The steel sleeve material is to be of sufficient strength to safely carry construction equipment loads on the backfilled canal.
- If steel piping is used for the sleeve, such are to be structural steel pipes as described for below grade suction lines.
- The basic work required and the costing undertaken is to supply the black poly in a sleeve and to lay such directly on the clay base. If it is determined that steel pipes or posts augered or driven into the clay are necessary the pipes will be paid as per the Table of Contingency Prices.
- The posts/pipes will require brackets to support the sleeve material.
- The spacing of the posts will have to be sufficient that the sleeve can span between posts with no support.
- The Contractor will be required, when posts are deemed necessary, to submit an Engineer's stamped shop drawing of his proposals for steel piling and piping so that the Engineer may verify that such is sufficiently strong to serve as a carrier for the black poly. The imposed future loading may be track mounted equipment, dump trucks and/or agricultural equipment.
- If support piles or posts are not used the project will attend to the costs, as part of the grantable special benefit, to reset any pipes that settle or deform up to the end of the warranty period, which is one year from final construction of the canal and berm work, where grade concerns are brought to the attention of the project.
- The pipes and lines shall be placed such that a slight downgrade exists from the existing crossing to the new canal and the black poly piping shall be of sufficient length that it extends into the canal to allow the landowner to affix his screen, support, etc.
- Temporary supports will be necessary for the poly piping extension within the canal as part of the tender.
- Cofferdamming and dewatering of the area of extension into the canal is to be provided.
- Any screens or end protection will be the responsibility of the landowners.
- The black poly is to be one size larger than the existing crossing and the Contractor is to supply and install sufficient couplings and clamps to join the new poly to the existing crossing.
- Clamps and couplings for the black poly are to be aluminum cam and groove materials with gear type clamps or approved equal (Type C female, Type E male).
- Measurement for payment will be per each below grade line extended depending on pipe diameter.
- The payment is to include any clay cofferdam bases, excavation, dewatering, sleeves, piping, connections, temporary supports in canal and maintenance.

 

- Black poly material is to be a minimum of Oil Creek Poly as supplied by Vandenbussche or equal. Landowner may request and pay difference for upgrade or have such added to his assessment as a non-grantable benefit.
- If posts for support are placed, they will be part of the grantable special benefit.

## ***D16 INDIVIDUAL BELOW GRADE IRRIGATION LINE EXTENSIONS (TYPE D & E WORK) (Items 40 & 41)***

- Where the Extent of Work notes require extension of below grade irrigation lines (suction or sub-irrigation), the work will involve constructing clay cofferdams across the existing canal at line locations prior to backfilling of the canal, excavating in the canal backfill and in the clay and in the berm between the old and new canal placing, supplying and installing new structural steel pipe or approved equal to extend the irrigation line, connecting to the existing line and relocating any existing screen or inlet.
- The work may be done by the Contractor in advance of canal filling or may be done after or part in advance and part after.
- The Contractor may choose initially to install the pipe extensions on steel or wood piles in order to avoid the use of the clay cofferdam but shop drawings stamped by an Engineer will be required to show that the piping is sufficient to span between the piles with the normal dead and live loads, that the piling is adequate and that supports are provided for the piping.
- The requirement of this document is that the extension for any below grade line be installed such that its grade remains intact.
- Where clay cofferdams are used, and unless the Engineer directs, the piping is to be laid on the trench excavated in the clay cofferdam without any pile or post support. If any settlement or need to reset the pipe occurs within the warranty periods (one year from completion of the work) the project will attend to such work (as part of the grantable special benefit) unless it is determined that poor materials or methods were used for the clay cofferdam in which case the Contractor will be responsible for the repair and for a further one year period.
- If the Engineer authorizes driving or augering wood or steel posts or piles, initially in the clay cofferdams and prior to laying of the pipe, the steel piles or posts are to be to a sufficient depth to avoid settlement and that can carry up to 23,000 lbs (10.5 tonnes ±) each and are to include the placement of brackets secured to the tops of these piles at the correct elevation and then the supply and installation of steel pipe of equivalent diameter to a sub-irrigation line or one size larger than a suction irrigation line and then the coupling of this steel line to the existing irrigation line.
- Where the existing irrigation line is used as sub-irrigation, the diameter may be the same as existing.
- The documents will indicate the required diameter or such will be provided prior to ordering.
- The work will also involve the supply of sufficient pipe that the pipe extends into the canal to a sufficient length that it is not impeded by the new canal bottom. Temporary supports are to be placed by the Contractor but final supports are to be by the landowner.
- The steel pipe to be used for any extension of a sub-irrigation or irrigation line is to be non-galvanized structural steel piping CAN/CBA G40.20-M Specifications, Grade 350W (350 mPa yield strength)
- Diameter and wall thicknesses are to be 16”-1/4”; 12”- 3/16”; 10”-7/32”; 8” – 1/4”; or 6”-14/32”
- The steel strength/quality may be altered if the Contractor chooses to supply and install a carrier sleeve (beam or channel) provided the beam or channel iron is capable of spanning between piles, if required, and/or is capable of withstanding superimposed traffic loads above the steel casing. An Engineer’s stamped drawing for such is to be supplied if such is proposed.
- Lengths of steel pipe are to be selected to minimize welds.
- Extension lengths are to be field welded to existing lengths or are to be joined to existing valves.
- The Contractor is to propose his own method for cofferdamming and dewatering the area to allow pipe placement into the canal.

 

- The work is also to include relocation and replacement of any inlet screen that exists on the existing irrigation pipe.
- Any valves that exist on the existing irrigation pipe are to be retained and the connection of the new line is to be made on the outside of any existing valve. If any existing valve requires replacement, such will be paid as per the Table of Contingency Prices but will be part of the grantable special benefit.
- The timing of sub-irrigation line extensions and below grade suction line extensions is to be undertaken such that the down period for irrigation line usage is avoided during irrigation seasons. This may require the Contractor to have a separate and temporary pumping scheme into any sub-irrigation line until such is returned to use or may require the provision of temporary connections into the below grade suction line from the temporary irrigation line that is installed.
- This could involve a separate cut across a road and the supply of sufficient materials to extend from the cut to the landowner's pump but all this would be part of the temporary irrigation work.
- Careful planning of the location and the timing of transverse clay cofferdams will be necessary to ensure minimum down time for below grade lines and to minimize the number of clay cofferdams.
- The drawings will indicate the locations of the mandatory clay cofferdams.
- Any others placed for below grade irrigation lines will be part of the irrigation work tender.
- If the Contractor finds it necessary to dewater, such is to be included as part of the tendered price.
- All extensions are to be laid to a flat grade so that there is no loss of cover in the new canal.
- The measurement for payment will be in units of sub-irrigation line or below grade suctions lines that are extended, and based on diameter, and will be on an interval by interval basis since average lengths vary from interval to interval. The payment is to be complete for supply of all materials including clay cofferdams, excavating, granular base on clay, placement of the irrigation line extension, relocation of any existing inlets, retention of and connection to any existing valves.
- This item is subdivided in terms of pipe diameter used.

## ***D17 COMMUNAL BELOW GRADE LINE EXTENSIONS (TYPE EC WORK) (ITEM 42)***

- This report indicates that there are 6 communal lines that are used for irrigation purposes that are to be extended to the new relocated canal.
- These communal lines consist of plastic, steel or asbestos cement piping.
- The work involved to extend these lines is to be similar to the work for individual below grade lines except that steel posts or piles are required initially and they are to be augered or driven to support the extension.
- The pipe wall thicknesses and the steel quality is to be as required by CSP Item D15.
- The piles or posts are to be capable of supporting a minimum of 23,000 lbs each and the spacing of the pipes or posts is to be a maximum of 2.4m (8').
- Brackets to restrain and support the pipe extension are to be secured to the piles or posts.
- Stamped shop drawings are required for each extension if materials or methods different than above are proposed.
- Where a valve exists on the existing line, the connection may be made at the valve. If a new valve is required, such is to be supplied and installed with additional payment as per the contingency item and with an added grantable special benefit assessment to the landowners served.
- Any existing inlet box or screen on the existing communal line is to be salvaged and re-located or is to be replaced with a new screen inlet structure, if the contractor chooses, of approved design and as part of the tendered price.
- The new line is to extend a sufficient length into the canal that is has a free and unobstructed inlet and so that adequate support exists for the inlet screen.
- Contractor is to devise his own method of cofferdamming the area where the pipe is extended into the canal and is to dewater such.
- The piping in the canal is also to be sufficiently supported.
- The work is to be warrantied one year from full construction completion.

 

- The measurement for payment will be for each communal line extended but categorized per pipe diameter and the payment is to include all required materials, placing clay bases, excavating, placing of pile supports and brackets, placing of the steel pipe extensions, relocation of screens, connections to existing valves and backfilling.
- All communal line extensions are to be laid to a flat grade so that there is no loss of cover in the new canal.
- The clay cofferdam placed for a communal irrigation line extension (one of the mandatory transverse cofferdams) is to serve as the confining cofferdam for the canal excavation work so that the communal line is out of use for only a minimal period of time by constructing the extension while the existing remains in service.

## ***D18 INLET SCREENS AT ALL BELOW GRADE IRRIGATION LINE INLETS***

- Wherever possible existing inlet screens are to be salvaged and reused.
- Any screen for any communal or sub irrigation line is to protect the inlet from the entry of debris and rodents and also is to have sufficient area that it can tolerate extensive clogging.
- A typical inlet screen would be a cage type of inlet that fits snug to the irrigation line.
- A shop drawing must be submitted and be pre-approved for any communal line inlet where re-use of an existing screen is not possible or is not the choice of the Contractor and/or land owner.
- There will be no measurement for payment for reuse of existing screen, as such are to be part of the unit price for below grade line extensions.
- Any new screens, ordered by the Engineer, including supports, will be paid at a prenegotiated and approved price.

## ***D19 RELOCATING EXISTING OR SUPPLYING NEW VALVES (Part of other work)***

- Where it is necessary to remove and relocate an existing valve or to supply and install a new valve and where separate tender items for such applies, this special provision is applicable.
- The work will involve cutting and removing as necessary the valve from the existing pipe, the careful salvage of such and then the relocation of such to the new section of pipe to which it is to be applied, the supply and installation of the necessary fittings and then the clamping and affixing the valve to the new section of pipe or the disposal of the existing valve and the supply and installation of a new valve.
- A prepared base resistant to settlement is to be prepared for the valves similar to the base for the piping.
- The valve shall be checked to ensure it is easily opened and closed.
- Measurement for payment will be per unit of valve removed and relocated, and is to include all work to cut and remove and relocate and join up the existing valve, to test its operation and to prepare the base or to remove and dispose of existing valves and to supply and place new valves.
- The costs will be a grantable special benefit assessment to the landowner.
- Where the Engineer deems a valve does not require relocation, any works done will be a non-grantable special benefit.

## ***D20 CANAL SIDE WELL RAISING (TYPE G-R WORK) (ITEM 44)***

- The work involved with this activity is to provide elevated protection at any canal side well that remains.
- The work will involve using concrete casing enclosures or the extension of the existing steel well casing.
- Each well will be separately reviewed (and there are 12 noted to date) and the specific work will be established at the time of construction.

 

- In general, the extension is to be sufficient to elevate the well top to a level higher than the berm that is created with bolsters placed to protect such.
- Where the well exists as a small diameter steel well casing only, the casing may be extended by threading an extension to the existing one with a tee included for any overflow. Any cap will have to be replaced. Bolster protection would still be required.
- Where the canal side well does not have a concrete casing or extension, and where just extension of the steel casing is not required, a new concrete ring with a 300mm (12") depth and 300mm (12") width is to be poured as a base and then concrete casing is to sit on the ring and is to be used to protect the well access to the surface of the finished berm. The casing material used is to have a manhole grate affixed to it.
- As an alternative to well casing, precast concrete catchbasin material may be used provided a poured in place 300mm (12") deep rectangle, 150mm (6") wide base with resistance to cracking is poured to support the concrete lift. The concrete lift shall then extend to 300mm above the finished grade of the boulevard area and a manhole grate shall be attached to it.
- The grate shall be in accordance with OPSD specifications.
- As a further option, precast 1200mm diameter concrete manhole sections may be used provided a similar concrete ring footing for such is poured in place.
- The footing is to be a minimum of 300mm in depth and a minimum of 200mm in thickness and is to have reinforcement placed for it. A traffic proof frame and cover is to be used.
- Wherever the casing material is greater than 900mm in height, a ladder or steps are to be provided inside the casing, catchbasin or manhole.
- Wood post or concrete filled corrugated steel pipe bolsters are to be placed around the well extension to protect it from vehicles. A detail for bolsters will be provided. Spacing of the bolsters shall be 600 mm.
- The measurement for payment will be per canal side well raised. The payment is to include the preparation of base material and concrete foundation for the casing material, the supply and installation of the casing material, the extension of any steel well casings, the provision of overflow piping, and the supply of bolsters, the excavation and disposal of materials for such, the backfilling of such and the supply of manhole grate or cover.
- The project may deem that all or any of the canal side wells should be abandoned and sealed and be replaced with new drilled wells on the land of the canal roads. Where done, separate and additional payment will be made.

## ***D21 WELL OVERFLOW OUTLETS (ITEM 45)***

- The work required with respect to any well overflow outlet involves the extensions of the existing outlet from the well and the supply of new plastic agricultural tubing to outlet to the new canal.
- This work is applicable to those canal side wells affected where the canal is being relocated away from the existing dyke.
- Where new berms are involved, the work will involve extending or adjusting any existing outlet riser horizontally and at the existing level so it can discharge into 150mm dia. solid agricultural tubing as supplied by Big O or equivalent that is laid on pallets from the new canal to the piping outlet. The tubing shall be brought up or through the berm slope to within 150mm of the outlet. Both the riser and tubing shall be staked in place. The 150mm spacing is required as an air lock.
- For extensions where no berm exists, the existing outlet may discharge into the new agricultural tubing but all work re staking, grading, pallets, etc. apply as for work where a berm is built.
- The well must be protected from damage.
- The plastic tubing is to be placed just below the surface of the canal backfill as directed by the Engineer and in accordance with the provisions for grading for lines (placing on pallets with floatation if and as necessary).
- The route for the tubing is to be pre-graded and the grade of the tubing is to be adjusted as necessary within the warranty period of the project.

 

- If sleeves are deemed necessary, additional payment will be made.
- A stake at the outlet is to be placed to secure the well outlet piping.
- The canal bank is to be recessed to allow the outlet to be protected from ice flow or maintenance operation.
- The outlet is to have a rodent gate as described in CSP D24 for drain outlets.
- The outlet stake at the canal is to be embedded a minimum of 4' below ground level and the tubing is to be securely attached to it.
- The grade of the line is to be set such that a minimum slope of 0.05% is given to the line.
- Any extension to the existing riser from the well is to be accomplished by using suitable reducers and elbows and piping with clamped (or other approved) connections to ensure that a watertight connection is created.
- The preferred material to extend these overflows would be 25 to 50mm black poly tubing but alternatives will be considered but must be pre-approved.
- Any leakage at any clamps must be corrected within the warranty period.
- The method of payment will be on a unit basis for each extension made. It is suggested the estimate be based on materials to make a riser extension and to place agricultural tubing a combined distance of 28 metres average. This will recognize that some of the extensions required on this project will be less than 28 metres in length while only a few will be greater in length than 28 metres.
- The payment is to include all work including careful extension or adjustment of any existing piping at the well, supply of all materials, laying and backfilling agricultural tubing and rodent gates and staking work at the new canal and at the canal.
- Provisions will have to be included for any concrete casing to allow for a well overflow.

## ***D22 BLANK***

## ***D23 COVERING ABANDONNED AND SEALED WELLS (Part of other work)***

- Two wells are noted to be on the canal side of the dyke and are to be sealed in accordance with MOE regulations by a licensed well driller. (More may be found during construction).
- The sealing work will be done outside of the contract for excavation and will be undertaken by the Board.
- If the Engineer requires an extension to an abandoned well such will be paid under the well extension item.
- The Contractor is to stage his work so that such wells will/can be accessed by the well driller and be sealed and then covered or extended later. No additional payment will be allowed for the delay.
- This item therefore requires that wherever the Engineer indicates that an existing well is abandoned and is to be covered, the Contractor shall supply a cap of sufficient size to fully cover the well.
- The cap is to cover a minimum of 300mm of pipe of the existing well. The annular space is also to have some type of medium placed to grout or seal the space.
- The materials that may be used for a well cap are steel that has an epoxy coating as a rust inhibitor, or high density polyethelyne. The well must have been previously sealed by a licensed well driller.
- The measurement for payment will be for each abandoned well covered and will include the supply and placement of the cap.
- If any other wells are found that are not used by the landowner, the Contractor is to notify the Engineer as soon as possible so that such may be sealed by the well driller and then covered by this item and at this tender price.

## ***D24 DRAIN OUTLET EXTENSIONS (Item 46)***

- Wherever the drawings and/or the Engineer requires 100 or 150mm (4" or 6") diameter agricultural tubing to be installed as extensions to outlets of drainage systems, agricultural tubing as supplied by

 

Coldstream Concrete Ltd., Big O or equivalent is to be supplied and used and to be installed in accordance with Specification 7.0 (Specification for Plastic Tubing Construction).

- The tubing is to be solid tubing. It is to be placed on a prepared grade across the canal backfill just below the surface. It is initially to be placed on pallets (with flotation where necessary) or equal on the prepared base. The landowner may later further bury such but will be responsible for its repair and maintenance.
- Its end is to have a rodent gate and the canal bank is to be recessed so the outlet is protected from flow, ice and maintenance.
- The tubing is to be connected to the drain outlet by approved tees, connectors and clamps.
- The diameter of the tubing is to match the existing outlet.
- It is to have a marker stake at its outlet. The Board will supply the marker stake.
- A check valve backflow preventer is to be supplied and is to be installed where designated at the drain pumping location (crock) on the marsh side where the drain outlet originates.
- The check valve may be placed just inside or outside of the crock and a separate box is not required for sure but piping to connect such will be necessary.
- The prepared grade must have a gradual downslope to the canal and is to be a minimum width to allow placement of the pallets or equal.
- Laser grade control is required.
- Minimum lengths of 28m are to be provided for in the tender. This length will provide for most outlets. Some may be shorter and some may be longer. No adjustment will be made for longer or shorter pipes.
- Minimum diameter of 100mm tubing is to be provided for in the tender.
- Measurement for payment will be per outlet extended with agricultural tubing. The payment is to include supply of all materials, the connections, bedding preparation, grade control, rodent gate, supplying and placing check valve at the landowner's crock, and placement of marker stakes.
- The existing canal road crossing is to remain
- If the engineer requires a new road crossing, payment will be made in accordance with the Table of Contingency Prices.

## ***D25 TEMPORARY IRRIGATION***

- Temporary irrigation is required wherever canal relocation excavation occurs adjacent to irrigation lines and irrigation inlets are being, or may be, used during the period of canal construction.
- Where such irrigation is occurring or may occur, the confining excavation cofferdams shall be located so that no more than 1000m of temporary irrigation line is necessary.
- Then to provide irrigation to the adjacent landowners, the Contractor is to retain a firm specializing in irrigation services and such firm is to supply piping and pumps such that up to 2 - 500 metre lengths of 200mm diameter piping is constructed along the existing canal edge with 3000 U.S. gallon per minute pumps at either end of the line and with inlet lines going from the pumps into the canal.
- The line and the pumps shall be sufficiently protected by pylons or other barricades so such are not damaged by the travelling public.
- The 200mm line that parallels the road shall be offset from the road as much as possible.
- Then quick connection taps shall be attached to this main irrigation line at the location of each private irrigation inlet.
- Then a cut shall be made in the roadway and a temporary irrigation line shall be supplied across the road for use by the landowner. Where the Contractor chooses to install the new final required 200mm road crossing line, or 250mm where required, as the final line and connect his temporary irrigation feed to such lines, this is possible. The Contractor may also chose to use the final pipe material but to set such at a higher grade for temporary irrigation and then to lower such when the final installation is made.
- The Contractor shall also supply suitable valves or shut offs at the canal side of each crossing to allow shutoff when the line is not in use.

 

- The landowner shall supply all connections on his side of the road crossing.
- The Contractor or his subcontractor shall also be required to speak with each owner that may irrigate and will be required to ensure that a plan is prepared setting out the hours that each connecting owner may use the line.
- The pumps supplied shall be such that the pumps provide automatic start up when pressure drops occur. A sufficient pressure in the line shall be maintained or so that any irrigating owner has sufficient water (1000 gpm minimum).
- Pumps shall be kept in service, to the pressure required, when and as directed by the Engineer or Drainage Superintendent. Pump locations shall be barricaded with concrete jersey type barriers or equal.
- The cut of the road for either temporary lines or permanent lines shall be in accordance with the special provision for Type A2 irrigation crossings. Utility locates and traffic control must be addressed.
- If the Contractor proposes to install only a temporary irrigation feeds across the road, the line shall be a minimum of 150mm in diameter hose (flex tex Koper or approved equal) and when it is removed, it shall be replaced by the required diameter of steel pipe.
- As an alternative, the Contractor may elect to connect the paralleling irrigation line to each existing irrigation line of the landowner that crosses the roadway. Sufficient lengths of flex tex Koper shall be supplied and clamped to make the connection.
- When the temporary line is removed, the Contractor shall then install the required new irrigation line in accordance with Type A2 irrigation crossings or whatever type applies.
- The costs to supply all materials, the pumps, the paralleling line, the inlets, the quick tap connections, values and individual leads shall be paid directly by the Board as a cost of the project.
- The Board will provide a second supply of all components including pumps in case of any accident or malfunction so that during irrigation season continuous irrigation is available. The Contractor's responsibility will be to pick up, deliver and set up any replacement and to ensure arrangements are made for repairs or replacement of any faulty parts.
- The Engineer or Drainage Superintendent will indicate when any temporary irrigation is to be initially placed and finally removed.
- The Contractor shall also ensure that the firm that supplies the temporary irrigation components assists in its installation, operation, repair and maintenance and is on immediate stand-by for emergencies.
- The tender for use shall be based on the components for temporary irrigation as listed in Appendix 12.
- The Board may, at the time of tendering, provide a detailed list of components to be supplied (if not supplied by the Board) and a separate tender item will be proposed.
- Where the Board has purchased the equipment for temporary irrigation components and has made such available for use, all costs of minor repair, maintenance and damage to the equipment is the responsibility of the Contractor. Inspections by the supplier would be necessary to verify condition during use and at season ends. If at any time repair is deemed necessary due to the fault of the equipment or normal wear-and-tear as verified by the suppliers, the Board will attend to such.
- The measurement for payment for use of temporary irrigation in the tender shall consist of two items. The first item will be lump sum for annual installations and movements and year end removal and the second shall be per hour that such irrigation line is in existence and is in service as directed and/or approved by the Engineer or Superintendent.
- The payments shall include utility locates, the arrangement for delivery and pick up of components, the retaining of a representative of the supplier to assist in set up and start up, the placement of pumps, lines and inlets, the movement of such as canal work continues, returns for storage at year ends, set up in following year, the excavation of roads, placement of temporary lines across road, traffic control, fuel costs, negotiations/discussions with landowners, restoration of road where necessary, and/or the connection to existing road crossings. Tender prices and payment shall also

 

recognize that any new crossings of the road will be paid also in accordance with the special provision for Type A2, etc. new lines.

- If the Board elects to separately tender temporary irrigation work, the Contractor will be required to cooperate with and coordinate the canal work to allow for the temporary irrigation work by others.

## E TRAFFIC AND ROAD PROVISIONS (COMMON TO ALL ITEMS)

### *E0 MAINTAIN TRAFFIC (General )*

- As has been indicated in other locations of these documents, the Contractor will be required to maintain the flow of traffic.
- Where two lanes of traffic can be maintained but work is adjacent to the road, sufficient signing to notify the travelling public of construction ahead and then pylons or other delineators along the work area will be necessary.
- Where the operations are such that one lane of traffic must be closed, sufficient signing must be posted ahead to indicate that such is occurring, and then sufficient delineators are required to protect the lane closed.
- As well, the Contractor will then be required to supply either traffic lights or flagmen to allow for the passage of the travelling public.
- Such use of flagmen or signs can only be avoided if the road authority specifically indicates such is not necessary.
- Where a road is to be closed, the road is to be signed in advance of closure. Notices will be placed in newspapers by the Board. All emergency agencies are to be notified by the Board but then once the road is closed, a detour route must be signed and used by the Contractor. Sufficient lead time for all closures will be required.
- Wherever a road is closed, access for local traffic must always be available. A landowner must be able to reach his property from one end of the Canal Road or the other. The only time that a landowner will not be allowed to use his specific laneway is when excavation equipment is sitting right in front of it. The Contractor is to co-operate however with all landowners to ensure that passage of the local farm equipment is accommodated.
- The provisions of maintaining access to a landowner's property on dykes that are private and not used as public roads must also be observed. The Contractor is required to ensure before he starts any work on a dyke lane that access is available from both ends of the dyke lane so that a landowner may reach his fields or buildings from one end or the other.
- Access for emergency equipment/vehicles must also be maintained at all times.
- All traffic plans permits and notes with respect to road restrictions or closures will be prepared either by the Engineer or by his consultants and paid directly by the Board. The Contractor's responsibility will be to supply, erect and maintain all measures included in the traffic control plan.
- The costs of traffic control are to be a general item and are to be included in the Contractor's allowance for general work or in with his other tender prices.

### *E1 TRAFFIC PROVISIONS ALONG DYKE ROADS*

*a) Along Dyke Where Used as Lane (Earth Surface)*

- In these areas, the dyke will be used as working area (in whole or in part)
- Contractor to ensure at all times there is sufficient room for one lane of traffic for domestic, agricultural and emergency use to all buildings and fields on each side of his equipment location.
- Access to be provided for all owners from public roads at both ends of dyke prior to start of excavation work
- Excavation machinery is to move when and as necessary to allow seeding or harvesting traffic from buildings to fields to pass by if no other adjacent access is provided or available.

*b) Along Dyke Roads When Equipment Operates on Road*

 

- Along South Canal Bank Road, Canal Road, Woodchoppers Lane, King Street or Pumphouse Road, wherever construction occurs from the road, traffic control measures are required.
- Desirably and wherever possible a minimum of one lane of traffic is to be maintained.
- Provide and sign detour routes when road is to be closed
- Obtain prior approval from road authority re signs required and location, re conditions and re times of road closure
- Advertise in local newspapers re all road closures (unless Board advises they will do such)
- Notify all school board, ambulance, police and fire agencies (unless Board advises they will do such)
- Maintain access for local traffic
- Allow passage of all local farm equipment (farm to field)
- Provide continuous dust, mud, snow and ice control
- Where one lane is closed, signing and delineators and flagmen or traffic lights are required to the satisfaction of the County or Municipality to provide for the safe passage of the public.
- Where the road is fully closed, an acceptable detour is to be provided to the satisfaction of the County or Municipality and is to be appropriately signed by the Contractor.
- Where one lane of traffic or a detour route is provided, the Contractor shall sign such in accordance with Book 7 of the Ontario Traffic Manual unless required or allowed to do differently by the local jurisdiction.
- Prior approval for all signing and detour routes is required from the Road Authority.
- Provisions must be made for local traffic when a detour route is created.
- Where construction occurs along the road even if two lanes of traffic can be maintained, construction signing shall be applied and used in accordance with Book 7 or as directed by the Road Authority.
- There will be no separate measurement for payment for traffic provisions.
- The costs of all signs is to be by the Contractor unless the Board indicates such will be supplied.

## ***E2 TRAFFIC CONTROL PROVISIONS ALONG HIGHWAY 9***

- Where work occurs in Interval 18 access for construction equipment to the work area may only be across or from Highway 9 in line with the various exits to the service road on the north side of Highway 9.
- The initial entry into the work area shall be undertaken during low traffic volume periods (10:00 a.m. to 3:00 p.m. or from 7:00 p.m. to 6:00 a.m.).
- An encroachment permit shall be obtained and pre-approval of Ministry of Transportation staff will be required and all requirements of MTO are to be implemented.
- The Board will make the application once the Contractor has provided his scheduling and work plan
- At least 60 days lead time will be necessary for the permit from time of application.
- Where access is to be made onto Highway 9 for hauling procedures, full time traffic flagmen will be required and/or a traffic light system, and construction signing as per Book 7 of Ontario Traffic Manual is to be provided and installed.
- Access to the boulevard for hauling at any other location is only to be undertaken if approved by MTO.
- Different signing may be required initially for the excavation work and then for later when the materials are hauled out.
- The Engineer will retain a traffic specialist to prepare and have the Traffic Plan approved.
- The Board will pay the cost of the application and the supply of the signing or lighting to MTO requirements.
- The Contractor’s responsibility will be to erect, operate, maintain and remove all signs, lighting and/or to pay the costs of all flagmen.
- The tender carries an allowance only for all traffic measures on Highway 9.

 

- Once details of the required measures are established, the Contractor will be required to negotiate a lump sum payment for his work re the traffic measure.
- The Contractor shall give the Engineer a minimum of 3 months notice as to when signing is necessary (30 days to prepare application, 60 days allowance for receipt of permit).
- All costs of the traffic plan and encroachment permit and the supply of signs for traffic provisions on Highway 9 will be a special assessment to MTO.
- All costs of the Contractor for erection and operation will be a general project cost.

## ***E4 REMOVAL OF EXISTING GUIDE RAIL (Item 25a)***

- The drawings indicate the locations of guide rail removal
- Where other guide rail exists that is requested by the Engineer to be removed at the time of construction, this special provision and similar measurement and payment will apply.
- The Engineer will designate the extent of guide rail to be removed where such differs from that shown on the drawings or is in addition to such.
- The method of removal of guide rail shall be first to remove and dispose of any cables or beam rails and then removal and disposal of the posts. The disposal site shall be determined by the Contractor. Where the Road Authority requests, the materials are to be carefully removed in whole or in part, are to be carefully removed for salvage and are to be stockpiled at a site designated by the Engineer along one of the canals for pick up by the Road Authority. Any materials not required are to be disposed of off site.
- Traffic control is required during the removal work.
- Any holes left by removal of the posts shall be filled with earth material and tamped in place and the area shall be graded upon completion.
- Measurement for payment will be in lineal metres of guide rail removed and shall be payment in full for removal and disposal/stockpiling of the rail and restoration of the grounds after, and shall also include any necessary traffic control during the work.

## ***E5 NEW GUIDE RAILS (Item 25b)***

- All new steel beam guide rail is to be installed in accordance with OPSS 552 and OPSD 912.130 (steel post) or OPSD 912.140 (wood post) and as directed by the Road Authority. Both above options are with channel.
- Steel or wood posts and steel beam rail is required.
- Approach end treatment is to be as per OPSS 559 (Steel beam energy attenuating terminal systems) and shall be either as per OPSD 922.530 (wood post)/922.532 (steel post) or 922.180 (wood post)/922.181 (steel post).
- Leaving end treatment is to be as per OPSD 912.235.
- At all irrigation crossings and at access points to the canal, end treatments as per OPSD 912.101 – Terminal Section Component and a 1 metre wide gap is to be provided.

## ***E6 SPECIAL GUIDE RAILS (Item 25c)***

- The work involved with special guide rails will involve guide rail work at locations where both protection as a guide rail as per CSP E5 and protection for flooding is required.
- The work involved will be to construct standard guide rail work except that the guide rail posts are to be 600mm± greater in length and are to be capable of enclosing and/or supporting the panels to be used for floodproofing.
- To provide for flood protection, a system of panels between the posts will be required. The first option is to drive shallow interlocking steel sheet piling (L50 sections as supplied by CMRM or equal) of an approximate height of 3m so embedment occurs, and so that the top of piling is at the top

 

of the guide rail beam. Posts are to be 8" x 18" beam sections. Securing of panels to posts to be in accordance with supplier's recommendations.

- The other option is to place horizontal galvanized corrugated steel bridge plate panels (4.3mm thick as provided by Armtec or equal) that are embedded a minimum of 600mm in native ground and that also extend to the top of the guide rail beam, or such other elevation as noted on the drawing. Guide rail posts are to be W250 x 49 and at an approximate spacing of 2.25 metres and panels are to be bolted to the posts in accordance with supplier's recommendations.
- All panels are to be drilled with 150mm holes to provide for normal drainage (200mm spacing at staggered elevations at ground level) (applies to steel piling or bridge plates).
- An option involving a wood stop log panels that can be inserted in the flanges of the guide rail posts and that can be embedded in a peat trench may also be involved but subject to pre-approval of the Engineer.
- The piling or panels are not to be fully water tight at the guide rail posts.
- A shop drawing is to be submitted for the panel and posts proposed. The Engineer may require construction of a prototype (with payment) prior to final approval of the system.
- The measurement for payment is to be per lineal metre of guide rail constructed complete with posts, guide rail beams and flood proof panels, pre-drilled holes for drainage, and including embedment. The payment is to include preparation and cleanup of the site and maintenance of traffic during operations.
- The requirements of CSP E5 also apply to this item.

## ***E7 CANAL BANK ROAD RECONSTRUCTION (SPECIAL ITEM)***

- This reconstruction may be required in Interval 17 and also at other locations as designated on the drawings or by the Engineer at the time of construction.
- Where this road reconstruction is required and where the road is asphalt, the Contractor shall mill and save the existing asphalt, shall then excavate and save any existing and reusable granulars shall then excavate the road to the subbase level which is to be a minimum of 600mm below finished grade and to the subbase width which is to be a minimum of 8.5 metres unless directed otherwise. Any granular or earth materials excavated that are not suitable for re-use are to be removed and disposed of. (May be disposed of in canal backfill unless evidence exists of contamination.)
- The Contractor shall then supply, place and compact the required additional granular to widen the road and to raise it to the required elevation. A minimum of 150mm of Granular A shall be used and the balance shall be Granular B. In no instance shall less than 150mm of Granular A be supplied and placed. Where a road is to be raised, sufficient excavation shall be made to allow for such granular thickness.
- OPSS specifications for supply and placement of granular and for requirements for Granular A and B material shall be followed.
- Compaction to 98% SPD on granular is required.
- Granular must be placed at its optimum moisture content.
- Utilities are to be pre-located and protected. If any utility requires relocation, the work is to be undertaken by others.
- Contractor shall provide the required traffic control including detours, signing, flagmen and local access during construction. The Contractor shall determine from the Road Authority what traffic control is necessary.
- The work shall be done at off seasons of planting and harvesting as directed by the Engineer.
- The asphalt that has been milled may be used in lieu of the equivalent thickness of Granular A material and then a minimum of 50mm of hot mix asphalt HL3 on Township roads and a minimum of 75mm on County Roads shall be applied.
- It may be recycled and used for surfacing if approved by the Road Authority.
- OPSS specifications for supply and placement of hot mix asphalt or recycled asphalt will apply.

 

- Profile drawings will indicate the minimum longitudinal gradients of the road and the cross-sections on the drawings indicate the minimum cross slopes.
- A minimum of a 1m wide granular shoulder shall be constructed using a minimum of 250mm of compacted granular A materials. The slope of the shoulder shall be as per the cross-section.
- Adjacent grounds shall be graded into the new roadway.
- Where lawn areas exist, topsoils are to be saved and replaced and new topsoils are to be added as required. Maximum gradients for lawn areas are 10%.
- The lawns that are adjusted are to be restored with sod. The initial watering of the sod shall be by the Contractor and thereafter it will be the landowner's responsibility for watering.
- Driveways shall be blended to the new road. Where granular exists, the driveway shall be constructed like shoulder work and where pavement exits, it shall be done as required for the road work areas shall match existing. Asphalt is to be saw cut. Where paving stone exists, the Contractor has 2 options, where the Engineer allows: a) either saw cut the paving stone and place new asphalt to the property line or b) give the owner an allowance for the cost of the equivalent asphalt work (as reviewed and approved by the Engineer) and the owner will be responsible for blending in a paving stone driveway.
- If at any time the Engineer orders the Contractor to rewater the sod, payment for watering shall be in accordance with the item for watering.
- The measurement for payment of canal bank reconstruction shall be on a per square metre basis of roadwork and shall include any reconstruction of adjoining driveways and lawns. The payment shall include milling, recycling, excavation, new granular, new asphalt, topsoil and sod work, driveway work, traffic control, utility locations and protection.

## ***E8 PRIVATE DYKE ROAD/LANE RESTORATION (Common to all Items)***

- Where a dyke is used a private roadway and where the construction affects the surface of the road and where the dyke does not otherwise have to be raised, widened, or reconstructed, the road/lane shall be restored upon completion of construction.
- The Contractor shall first of all grade out any ruts in the surface and shall then apply new imported Granular A material and shall grade such over the roadway. In earth dykes non-organic soils shall be used.
- Where necessary, compaction is also to be applied to the roadway.
- Where a gravel laneway has been used by the Contractor, this resurfacing work shall also be applied to the gravel laneway.
- All gravel shall be applied such that it does not impact the junction at lawn areas or at paved driveways.
- The work shall also be undertaken to recognize any utility lines and to minimize removal of any trees or branches that do not otherwise have to be removed. Where such are to be trimmed to avoid breakage, cutting close to trunks or feed branches shall be done and the materials shall be hauled away.
- Where a laneway is similarly restored, similar payment per tonne of Granular A will be made.
- There will be no separate measurement for payment. This work is to be included as part of other items.

## ***E9 MAINTENANCE OF ACCESS ALONG EARTHEN DYKES (General)***

- Wherever a section of earthen dyke that is used by a landowner(s) for access is blocked by construction equipment working from the dyke, access must be provided to the owner from the opposite direction along the dyke.
- To satisfy this requirement, any sections of earthen dyke must be cleaned and prepared for access throughout from Public Roads prior to the excavation commencing.

 

- This will require pre-clearing and preparation of the dyke road to allow such access to be available.
- Also when a landowner requires access to or from his fields to the dyke, the Contractor is to accommodate the landowner at all times.
- There will be no separate measurement for payment for this item.

## ***E10 ACCESS ROUTES ON PRIVATE PROPERTY (GENERAL)***

- This document requires access to be provided to all work areas.
- Discussions have occurred with some owners prior to the preparation of this report and those access routes that have been discussed, and that are now available, are shown on these documents and the allowances recognize such.
- In other instances, on-going discussions will occur by the Engineer with adjacent owners for access and such will be designated by the Tender Documents. Owners will be compensated by the Board for such newly negotiated access out of the fund created for such.
- The allowances provided recognize that these access routes will be used.
- In many locations, access will be obtained from roads that cross over the canal and in the corridor provided for canal relocation adjacent to the canal.
- In other locations, it is anticipated that access to work areas may be constructed by the construction of transverse earth cofferdams across the existing canal. These cofferdams would then serve as confining cofferdams during canal backfill.
- The Contractor may also elect to supply and use temporary bridges such as bailey bridges or floating bridges.
- There may be in some locations where a Contractor negotiates with a landowner directly for access for the project. These negotiations will be fully between the Contractor and the landowner. The Engineer will only be involved to ensure that any access routes used do not create problems to the environment, for traffic road uses or to the landowner.
- The CEAA Assessment prepared for this report recognized that the considerations of the Study Report apply to access routes.
- Where any clearing is required along an access route such will be paid as part of a clearing item.
- The clearing is to involve chipping and mulching and the chips are to be spread on the laneway. Any trunks not chipped are to be left just off the laneway.
- However, other works to maintain and restore access routes are to be a general cost to the Contractor.
- On designated access routes, the Engineer will ensure that the requirements for maintenance and restoration are attended to and that the landowner is contacted prior to completion of access route usage.
- Restoration of the lane is to be done at the completion of the project to the satisfaction of the owner.
- See also CSP Item A9.

## ***E11 CLOSING ROAD FOR EXCAVATION***

- Wherever the Contractor selects to use the dyke roads in part or in full for his new canal excavation or existing canal backfill, the road is to be closed and the measures referred to for closing roads with respect to advanced notices in newspapers, notification of emergency departments, signing of a detour route, signing of the closure are all to be implemented. Also the provisions with respect to mud, snow and dust control will also be necessary.
- The Contractor will be required to ensure that local traffic access is always maintained and that there are provisions for farm traffic.
- If it is required to trim trees along any road to allow such work to be done, all branches are to be chainsawn off prior to work and disposed of.
- The Contractor is also to be aware of the utility lines that exist along the road and is to select equipment that will minimize damage to such.

 

- Equipment sitting on the road is to ensure that the maximum space is left between tracks and the existing canal dyke interface to minimize damage to the road.
- The Project and/or the Road Authority will attend to restoration of any damaged asphalt in the road and/or filling of any cracks provided it is felt that reasonable care is being taken by the Contractor.
- Where it is felt that unnecessary damage is occurring, the Board and/or Engineer may require the Contractor to attend to the costs in whole or in part for any restoration.
- The Board and/or the Engineer will notify the Contractor as early as it is evident that concern exists with respect to the Contractor's methods not using a reasonable amount of care and protection for the roadway.
- The Board and/or Engineer do recognize that working from the road may keep overall project costs down and acknowledge that most costs of restoration of the road therefore should be with the Project and/or the Road Authority provided reasonable care is observed by the Contractor.

### *E12 ACCESS ON ADECAR PROPERTY*

- The Adecar property may be used as access for the project.
- When it is used, compensation will be provided out of the allowance for access.
- The work is to involve constructing a laneway to the new canal from the existing laneway which terminates southwest of Highway 11.
- The landowner will supply materials to be used for the laneway. The Contractor is to prepare the grounds for such and place such.
- During construction, the existing laneway is to be maintained to its existing condition and any new construction is to be graded to a smooth and level gradient.
- Upon the completion of the construction, similar restoration of both the existing and newly constructed laneway is to be undertaken.
- Some Granular A is to be supplied and graded on the existing driveway.
- Any clearing required for the access will be separately measured and paid.
- A sign-off letter from the owner will be required at the completion of restoration of the access.
- There is to be, otherwise, no separate payment for use of this access.

### *E13 ACCESS ON PULLA AND TUNNO PROPERTIES*

- Access routes were secured on these properties during the emergency work in Intervals 13 to 16.
- The owners have or will be compensated through the allowance for access.
- These access routes are also available for use during canal relocation.
- All provisions of private access route work in CSP A9 and E10 apply.

### *E14 ACCESS ON UNOPENED 2ND LINE*

- Approval was obtained during trial work in Interval 1 to clear and use an access from the travelled part of the 2nd Line through the untraveled part to the north canal.
- A width sufficient to pass construction equipment was cleared.
- This access may be used during canal excavation work.

## F UTILITIES

### *F1 POLE LINE RELOCATION OR REPLACEMENT WORK (SPECIAL ITEM)*

- At isolated locations on this project, pole line work is required to either relocate or to provide new service.

 

- Where an existing pole is to be relocated, the existing pole is to be removed and is to be replaced in the area designated by the Engineer to be outside of the location for the new canal work.
- Where the Contractor deems it more feasible to dispose of the existing pole and supply a new pole, such will be his opportunity.
- Any new pole required is to be a conventional utility pole.
- Each pole is to be installed by a firm experienced in pole line construction.
- Any existing line attached to the pole is to be extended to the new pole and the Contractor will be required to retain and use people qualified for such work.
- Any underground feeds from a pole to be relocated must be similarly adjusted.
- The unit price for each pole must include the supply or relocation of the pole and its installation complete with line or anchor/guy wire adjustment.
- The length of the pole above ground surface is to be so as to provide a minimum clearance to any line as per utility specifications or to match the clearance provided by the existing line.
- The length of the pole embedded is to be sufficient to recognize the subsoil conditions and the proposed length and method of securing pole is to be pre-approved with the Engineer. The extent of work may indicate where the work is to involve the pole only or where line work is also involved or it may be inferable from the drawings.
- Separate items are included for relocating anchor poles versus hydro poles (poles carrying hydro lines).
- As well where new poles are required where none exist, separate tender items will be included.
- Measurement for payment will be per pole relocated or newly constructed and is to include all work to remove existing pole, excavate, backfill, brace, relocate pole or dispose of existing and supply new, plant such pole and restring all overhead lines, to splice to any underground lines and to adjust/extend/shorten guy or anchor wires.

## ***F2 UNDERGROUND UTILITY PROVISIONS (GENERAL)***

- On private dykes, landowners and utilities companies are to be pre-contacted to determine utility locations
- Drawings included herein show underground utility locations on public or travelled roads based on utility company supplied data (no check was made that the utility companies supplied data for all their utilities.)
- Contractor is to arrange for all on-site utility locates
- Prior to any excavation across a road the utility shall be pre-exposed by vacuum excavation or equal but approved procedures
- The new work shall then be confirmed with the Engineer to avoid utility damage and to set grades for any crossing
- Protection of the utility during work is necessary
- Where utility relocation is necessary the Board will attend to or arrange such, but at the assessment to the Utility in accordance with Section 26 of the Drainage Act where the utility is deemed to be a public utility.
- There shall be no separate measurement for payment for dealing with underground utilities unless relocation is authorized by the Engineer and approved by the Utility.

## ***F3 OVERHEAD HYDRO AND BELL CROSSINGS (GENERAL)***

- This special provision applies where overhead utility lines may impact clearing and/or excavation works.
- The drawings attempt to indicate those locations of overhead crossings of the dyke road and of the canal, and also indicates where overhead lines parallel the canal which may impact the work. Other overhead utility locations are not shown on the drawings if it is felt they will not impact the work.

 

- The Contractor shall review the site and ensure he is aware of locations of overhead utility lines.
- The work required by the Contractor at overhead utility lines is to protect such during construction and to avoid methods that may cause contact with the utility line.
- Where it is evident that the utility line requires removal and/or relocation to allow the work, the Contractor shall indicate such to the Board and/or Engineer and the line will be reviewed to determine if it should be removed or relocated. Any costs to remove or relocate a line will be paid by the Board and may or may not be assessed to the Utility company depending whether it is a Public Utility.
- In some cases where it has been pre-deemed that overhead utility lines will impact the work, such will have been moved prior to the work.
- The Contractor must make such pre-inspection and can not claim for standby or delay of work should he encounter an overhead utility line which impacts his work.
- There will be no separate measurement or payment for locating, protection and avoidance of overhead utility lines or delays caused by overhead utility lines.

## ***F4 REQUIRED OFFSET FROM EDGES OF ROAD TO UTILITY POLES (GENERAL)***

- On this project, the required offset to any utility poles that are relocated or installed shall be a minimum of 3 metres from the travelled edge of roadway since design speeds are less than 60 km/hr.
- Where a roadway is not altered and the utility pole is also not altered, and the offset is less, this offset will remain. There will be no requirement to relocate a pole which is otherwise not required to be altered, only to provide for the new offset.
- Should any road be reconstructed after the canal work, either the road construction or pole relocation will implement this required minimum offset of 3 metres.
- If any road has a permitted speed of 80 km/hr, the offset is 4m if AADT is less than 1500 vehicles and is 5m if greater AADT's are involved.
- The inside and outside of curves in the road may require any new poles at these locations of curves to be offset greater than 3 metres, unless the curve is protected by guiderails. The greater offset will be determined at the time of construction.

## ***F5 PRIVATE UNDERGROUND WATERMAINS (GENERAL)***

- Where the project encounters a continuous underground watermain, the Extent of Work indicates the project is to protect such watermain unless special provisions indicate that such should be removed and hauled away. No additional payment will be made for such protection.
- The work involved under this special provision is to locate the watermain, to carefully backfill grounds above the watermain, and to ensure the location of the watermain is marked for future reference. The marking will involve the placement of iron stakes or equivalent at ends of the located system.
- The Contractor is also to ensure that the watermain is tied to the GPS system by the Engineer prior to backfilling.
- Where the work requires replacement of the watermain and including removal of such, separate and additional payment will be made for such. (See Contingency CSP Item I10.)

## ***F6 AVOIDING EXISTING SERVICES AND UTILITIES IN INTERVAL 18***

- This special provision applies to Interval 18 where a number of culverts and outlet channels cross Highway 9 and continue across the boulevard area.
- Also in Interval 18, any utility poles, underground Gas and Bell lines shall be prelocated and marked and the work shall be undertaken so as to avoid damage to such poles or underground utility lines.
- Also in Interval 18, a number of irrigation inlets with valves are across Highway 9 and across the boulevard area and outlet at the existing canal approximately 2 to 3 metres inside of the water level.

 

- The drawings indicate the location of these Bell and Gas lines (where data was supplied) culverts and irrigation inlets as identified by the survey, but this special provision also applies to any that are subsequently located but were not shown on the drawings.
- The work required will be to locate and mark all utility lines, culvert outlets and irrigation inlets, and the work shall be attended to so the features are not disturbed or impacted.
- There also exists a landscaped historical/memorial site. This area shall also be avoided and not disturbed.

### *F7 ADJUSTING GUY OR ANCHOR WIRES*

- Where it is necessary only to adjust guy wires or anchor wires to fit the new work without adjusting the pole itself, the work will be paid as a specific item and payment will be in full for supporting pole and relocating supports. The utility company and/or Engineer is to approve all adjustments to anchor or guy wires.

### *F8 UTILITY CONTACT NUMBERS*

- The current utility contact information is enclosed on the separate page inserted herein.

## G BRIDGES

### *G1 RECONSTRUCTION/REPLACEMENT OF BRIDGES (BY OTHERS) (Item 29)*

- The contract/project drawings and report indicates those bridge structures that are to be ultimately enlarged or reconstructed or replaced. For some structures, either enlargement or replacement may be selected by the Municipality.
- The report also indicates that two structures are to be replaced prior to construction of adjacent canal works.
- Where any structures are not replaced prior to canal work, the work to be undertaken is to clean out the bottoms of the structure and to install, where required, any temporary cofferdams whether it is interlocking steel sheet piling, earth, rock or equivalent until such time that the structure is replaced.
- In all cases, a separate tender will be called and let for bridge enlargement or replacement.
- The only items of work that are part of this contract are as designated on the drawings and in general is the cleanout work and the cofferdams. Canal Type VI work provides for bottom cleanouts through bridges.
- Where it is required that the structures be replaced prior to tendering, the drawings and specifications indicate the work that is to be undertaken to fit the reconstructed structure.
- Should the structure not be reconstructed ahead of time as required, a change order will be issued to provide for revisions to the canal work. (All costs for such will be to the Road Authority as a special assessment.)
- Where a structure may be enlarged or replaced after the initial canal work, any works to modify or alter the initial canal and cofferdam work will be part of the tender for the structure enlargement or replacement.

### *G2 CLEANOUT AT BRIDGES (SEE CANAL TYPE VI WORK)(CSP A3)*

- Cleanout of bridges is to be undertaken and paid as Type VI canal work.

## H SPECIFIC

 

## *H1 ROCK BASE FOR PARTIAL RELOCATION (INTERVAL 1)*

- This work applies to the partial canal relocation in front of the Gleason and Springdale Church properties to the west of 5 Sideroad.
- The work involved will be to construct the gabion stone base for the partial relocation work involved in this interval.
- Rock is being specified so that building side slopes of the berm may be kept at a 2:1 slope as opposed to a 3:1 slope for conventional earth embankments.
- The work involved will be to place filter fabric underneath the rock, to place the rock and then to place a further filter fabric on the surface of the rock prior to placing the earth.
- The filter fabric work will be part of the following item.
- The gabion stone to be used is to be 150mm to 200mm particle size. The work is to commence at the west end of the work area. A ramp will be necessary from Canal Road to the work area, and then the stone is to be placed by pushing it longitudinally so that sediments adjacent to the existing Canal Road are displaced into the centre portion of the existing canal.
- The width of the stone base is to be as per the cross-section included in the contract drawings of this location.
- The stone placement is to be to a level to be 300mm above the design water level.
- Continual passage over the rock during its placement by equipment is necessary to ensure the maximum amount of compaction.
- The width of the rock at the level of 300mm above water is again to be as per the cross-section provided.
- The estimated quantity of rock required to complete this base for partial relocation is 3000m³.
- Final payment will be based on weigh tickets provided with a conversion of between tonnes and cubic metres. Unless indicated or show to be otherwise, the conversion factor will be 1.47 tonnes per cubic metre.
- All vegetation along the north edge of Canal Road is to be removed to ground level prior to the placement of the rock. Also, all irrigation and well outlets are to be noted and are to be protected during the placement of rock.
- The work is to blend in with the existing access to the Gleason property and to the embankment for 5 Sideroad.

## *H2 FILTER FABRIC AT ROCK BASE (INTERVAL 1)*

- A filter fabric specifically designed to be a soil separator for use with rock overlays is to be placed continuously under the rock required and described in CSP H1. The filter fabric is to be placed as a continuous roll to as long as possible.
- Widths are to overlap by a minimum of 3 metres longitudinally and 1 metre laterally unless such greater overlap is recommended by the supplier.
- The filter fabric should extend a minimum of 1 metre beyond the base for the rock.
- Payment will be made per square metre of filter fabric supplied and used. Payment is to be in full for the supply and placement of the filter fabric.
- The filter fabric to be placed on the surface of the rock is also to be designed as a soil separator to allow the excavated earth to be placed on the surface of the rock without a significant loss of material into the rock. Similar overlap and measurement for payment of surface filter fabric will be made.
- Payment will be made per square metre of filter fabric used with approval.

## *H3 COVERING ABANDONED WELLS WORK (PREVIOUSLY SEALED BY OTHERS)*

- This work is described by construction special provision D23 but the payment for the work is to be in accordance with this construction special provision..

 

# UTILITY CONTACTS FOR THE HOLLAND MARSH PROJECT

| Contact | Company | Telephone | Mobile | Fax |
|---|---|---|---|---|
| Kevin Galway<br>Supervisor<br>Leak Survey | Enbridge Gas Distribution Inc.<br>6 Colony Court<br>Brampton, ON L6T 4E4 | 905-458-2117 | 416-254-1925 | 905-458-2146 |
| Steve McGivery<br>Mgr. Construction<br>Central Region | Enbridge Gas Distribution Inc<br>498 Markland Street Unit 1<br>Markham, ON L6C 1Z6 | 905-887-4005 Ext 283 | 289-314-6854 | 905-887-6839 |
| Eric Sheridan<br>Const. Supervisor<br>Central Region | Enbridge Gas Distribution<br>Same as above | 905-887-4005 Ext 247 | 416-574-0203 | 905-887-6839 |
| Luke Cechetto<br>Supervisor<br>Planning & Design<br>Distribution Planning | Enbridge Gas Distribution Inc<br>500 Consumers Road<br>North York ON M2J 1P8<br>P. O. Box 650, Scarborough, M1K 5E3 | 416-758-7935 | Pager<br>416-379-7771 | 416-758-4374 |
| Tim Dykas<br>Supervisor, Construct.<br>Central Region | Enbridge Gas Distribution Inc.<br>93 Edward Avenue<br>Richmond Hill, ON L4C 5E5 | 905-883-2629 | 416-805-7394 | 905-883-3279 |
| Eric Jorgensen<br>Performance Standards<br>Inspector<br>Damage Prevention | Enbridge Gas Distribution Inc.<br>950 Burnhamthorpe Rd West<br>Mississauga, ON L5C 3B4 | ONE CALL<br>1-800-400-2255 | 905-302-7843 | Pager<br>416-381-3173 |
| Terry Regan<br>Operations Supervisor<br>Central Region North | Enbridge Gas Distribution Inc.<br>93 Edward Avenue<br>Richmond Hill, ON L4C 5E5 | 905-883-3224 | 866-612-3220<br>Ext 3224 | 905-883-3279 |
| Mike Miller<br>Supervisor<br>Planning & Design<br>Distribution Planning | Enbridge Gas Distribution Inc.<br>500 Consumers Road<br>North York ON M2J 1P8<br>P. O. Box 650, Scarborough, M1K 5E3 | 416-758-7937 | 877-766-6696<br>Ext 7937 | 416-758-4374 |
| | | | | |
| Gord Brown<br>Senior Inspector<br>Fuels Safety Program | TSSA<br>(Technical Standards Safety Authority)<br>14th Floor, Centre Tower<br>3300 Bloor Street West<br>Toronto, ON M8X 2X4 | 647-221-2595<br>Spills Action – 24 hrs<br>1-800-268-6060 | Toll Free No.<br>1-877-682-8772 | |
| Colleen<br>Murphy | Bell Canada<br>Floor 2, 444 Millard Avenue<br>Newmarket, ON L3Y 2A3 | 905-853-4043 | | 905-895-3872 |

**CONTACT LIST CONTINUED**

| | | | | |
|---|---|---|---|---|
| Slavko Vranjesevic<br>Area Distribution<br>Engineering Technician<br>Provincial Lines Newmarket Area | Hydro One Networks Inc.<br>913 Crawford Drive<br>Peterborough, ON K9J 3X1 | 905-713-1215 Ext 252 | 905-955-1528 | 905-713-6927 |
| B. Jamie Bignell<br>Supervising Distribution<br>Engineering Technician Newmarket | Hydro One Networks Inc.<br>913 Crawford Drive<br>Peterborough, ON K9J 3X1 | 905-713-1215 Ext 260 | 416-791-1805 | 416-791-1805 |
| Ian Macpherson<br>Area Distribution Technician<br>Provincial Lines – Newmarket | Hydro One Networks Inc.<br>913 Crawford Drive<br>Peterborough, ON K9J 3X1 | 905-713-1215 Ext 283 | 905-955-4393 | 905-713-6927 |
| | | | | |
| John Hamilton<br>Manager<br>Lines & Substations | Barrie Hydro Distribution Inc.<br>55 Patterson Road, P.O. Box 7000<br>Barrie, ON L4M 4V8 | 705-722-7222 Ext 291 | 705-764-1637 | 705-722-4887 |
| Dan Deschamps<br>Electrical Engineering<br>Technologist | Barrie Hydro Distribution Inc.<br>55 Patterson Road, P. O. Box 7000<br>Barrie, ON L4M 4V8 | 705-722-7222 Ext 282 | | 705-722-9040 |
| Wayne Marchant<br>Hydro Locates | Barrie Hydro Distribution Inc.<br>55 Patterson Road, P. O. Box 7000<br>Barrie, ON L4M 4V8 | 705-722-7222 Ext 259 | | 705-722-9040 |
| Brian O'Gay, CET<br>Electrical Engineering<br>Technologist | Barrie Hydro Distribution Inc.<br>55 Patterson Road, P. O. Box 7000<br>Barrie, ON L4M 4V8 | 705-722-7222 Ext 357 | | 705-722-9040 |
| | | | | |
| Clifford Burdeyney<br>Team Manager-Maintenance<br>York Region | Rogers Cable Communications Inc.<br>244 Newkirk Road<br>Richmond Hill, ON L4C 3S5 | 905-780-7167 | 416-277-7814 | 905-780-7300 |
| David Anderson<br>System Planner<br>Outside Plant Engineering | Rogers Cable Communications Inc.<br>395-A Mulock Drive<br>Newmarket, ON L3Y 8P3 | 905-836-7558 | 416-294-7917 | 905-898-7577 |
| Paul Chetcuti<br>Municipal & Utility Relations<br>Simcoe-Grey, York, Durham | Rogers Cable Communications Inc.<br>244 Newkirk Road<br>Richmond Hill, ON L4C 3S5 | 905-780-7124 | 416-727-7294 | 905-780-7110 |
| | | | | |
| | | | | |

***H4 SHORTEN 300mm FIRE LINE (INTERVAL 1)***

- At Station 10+417 in the north canal, a 300mm rigid plastic fire line exists on the north bank of the canal. This serves a reservoir on the Springdale Church property.
- This plastic fire line is to be carefully located. Its inlet is to be retained and the line is then to be shortened to fit the new canal bank.
- The inlet is to be replaced on the line and any marker that exists is to be replaced.
- The work is to be paid as a lump sum item and is to include all work to locate and relocate the plastic fire line.

***H5 RELOCATE/MOVE ANCHOR OR HYDRO POLES (ALL INTERVALS)***

- The work required for this item is described by CSP F1.
- The payment for such work, however, is to be made under this item.

***H6 BLANK***

***H7 RAISE INTERLOCKING SHEET PILE WALL (INTERVAL 2)***

- This work item applies to the existing interlocking steel sheet wall in Interval 2 opposite the Bardawill pumphouse.
- This wall is approximately 125 metres in length. The easterly portion of this wall is substantially higher than the level required for protection against the 100 year flow while the westerly portion is slightly below.
- The work to be done in accordance with this item is either to cut these portions of the steel wall above the flood line and weld such to the existing low portion to make it a wall of continuous height, or is to involve supplying new or reasonably good condition used steel to extend the low portion of the wall to the height of the high portion.
- The approximate amount of steel to be added to raise the wall is 25m².
- The work under this item will require the contractor to determine the section of the existing pile wall, to locate steel piling of similar cross-section and to then weld such to the existing wall.
- The work will be paid as a lump sum item and is to include all work to either supply new or reuse existing to make a wall of continuous height at minimum elevation of 221.40.
- If the option is selected to supply new material and not to reuse portions of the existing wall, that portion that is above 221.40 may remain as is.

***H8 FILL IN ABANDONED CHANNEL (INTERVAL 4)***

- The work in this special item is to haul in or move sufficient of the excavated material either from the adjacent interval or from another location of canal work and to place such in the previously excavated but abandoned section of canal that extends from 5$^{th}$ Line westerly for approximately 300m.
- The existing abandoned section is to be cleared in advance and measurement for clearing will be part of the clearing item.
- The work then will involve hauling the materials and dumping such by continuously working over the surface of the material from either end.
- The placement of the material is to be to the level of the adjacent grounds. The edge of the material that will constitute the new north bank of the channel is to have a slope of 3:1, is to have a littoral shelf and is to be protected by an erosion control blanket below the level of the water.
- The estimated amount of material required is 2500 cubic metres.

 

- There will be no separate measurement for payment. The item is to be a lump sum item. The payment for the erosion control blanket will however be separately measured and paid.
- Should it be determined that substantially more or less than 2500m³ are involved (greater than a 10% discrepancy), a proportional adjustment will be made in the lump sum bid. Quantity used will be based on either cross-sectioning of the channel prior to and after filling, or by use of truck box measurement.

## ***H9 CONSTRUCT CHAIN LINE FENCE (INTERVAL 5)***

- The work in this location is described by CSP A29 but the payment for the work is to be in accordance with this item.
- Measurement for payment will be per lineal metre of coated chain link fence supplied and placed.

## ***H10 EROSION CONTROL BLANKET (INTERVAL 6)***

- The erosion control blankets to be used on this project are set out in Section B.21 of the Special Provisions.
- The blanket is to be installed in accordance with the manufacturer's recommendations including the amount of overlap to be provided.
- The suppliers' brochures must be supplied in advance for approval of the product to be used if different than above. Even if the above is used, the suppliers' recommendations for installation, overlapping, etc. are to be supplied for review and are to be followed.
- Measurement for payment will be per square metre of materials supplied and used in accordance with the requirements of the drawings and/or the Engineer.
- The quantity contained in this item will apply for payment for any other interval in which an erosion control blanket is supplied and used wherever separate payment has been indicated for use of erosion control blankets.
- In most longitudinal clay cofferdams, erosion control blanket is to be part of the cofferdam construction.
- Only in Interval 5 along the old canal bed filling and in this Interval 6 where partial relocation with earth below water is specifically provided for, is measurement for payment of the erosion control blanket anticipated to be made.

## ***H11 RELOCATE PUMPING STATIONS (INTERVALS 9 & 14)***

- There are two private pumping stations that exist within the alignment for the new canal. One is in Interval 9 and the other is in Interval 14.
- The work required in each interval will be to carefully move the existing pumping station laterally to outside of the new canal alignment work.
- The work is to include disconnecting and rejoining any lines of electricity that are joined to the pumping station.
- It is believed that the station at Interval 9 is abandoned and that there is no electrical used to it.
- In Interval 14, the lump sum item for relocating the pumping station is also to include the supply and installation of two new hydro poles and the provision of overhead hydro service to the pumphouse and the wiring of the overhead service to the relocated pumphouse building.
- The work is also to include removal and disposal of the buried underground or in-canal hydro line and is to include the connection of the new service to the existing pole line along the dyke road.
- Any electrical work is to be fully undertaken by people experienced in hydroelectric and pole work. The poles required will be as indicated by CSP Item F1.
- The reconnection of the inlet and outlet pumping lines are to be made to fit the new canal and are to be spliced to the existing lines.

 

- The superintendent for the golf course property is to be contacted and is to be present during and/or at the completion of this work in Interval 14. The owners are encouraged to attend to these items themselves.
- Measurement for payment will be on a lump sum basis for each site, is to include the relocation of the building, clearing of the site for it, the provision of new hydro service where required, removal of existing service and readjustment of all existing and usable inlet and discharge lines.
- The costs of the work will be assessed as a grantable special benefit if the work is undertaken by the project.

## ***H12 RELOCATE PRIVATE DITCH ON 363773 ONTARIO LIMITED PROPERTY (INTERVAL 9)***

- On this particular property, a private ditch exists on the outside (northeast side) of the existing canal. This ditch is to be relocated together with the relocation of the main canal.
- The work will involve clearing an additional 20m width of lands using the same process as the main contract, either partial mulching or full mulching. If partial mulching occurs, the owner is to be given the first opportunity for any of the trunks, cut into 6 metre lengths. If he does not wish such, the Contractor is to dispose of such off site or may use such for berm construction.
- Where the area is not covered by bush and field areas exist, topsoils are to be separately stripped and then replaced over the excavated channel.
- Once the clearing and/or topsoil stripping is completed, then a channel with a 1.5m parabolic bottom width, 10m± top width and 2m± depth is to be constructed. Side slopes are to be covered with any topsoils that are saved and then banks are to be seeded. The channel is to tie into the existing ditch at both the north and south limits of the property.
- Excavated materials from the channel are to be used in part to construct a berm between the new channel and the existing channel as shown on the applicable cross-section and the balance is to be used as existing canal backfill or are to be hauled to the adjacent stockpile site.
- The grade of the channel will be set by the Engineer at the time of construction but is to generally match the existing channel grade.
- The measurement for payment will be on a lump sum basis for the 400 metres± of channel relocation. The payment will include the clearing, topsoil stripping and replacing, tying into existing channel, and disposal of excavated material.

## ***H13 35m OF INSIDE BANK WORK INCLUDING LEVELING (INTERVAL 9)***

- The work required as part of this item is to reconstruct the west bank of the canal to the north of the existing Art Janse Pumping Station.
- Sufficient materials are to be excavated from the bank downstream of the pumping station outlets to provide a minimum water width of 20 metres.
- It will be necessary to clear and grub one existing tree at this location. Such is to be cleared, grubbed and disposed of off site. The excavation work is to provide a slope of 3:1.
- Materials are to be loaded and hauled to a disposal site, either in the existing canal backfill or to an off site location.
- The excavated materials may be leveled in the boulevard between the canal and the road if approval is obtained from the Board.
- Delineators are to be placed along the new canal bank to protect the new edge.
- Any permanent delineation or fencing along this edge is to be by the Board.
- This is to be a lump sum item and separate measurement for payment will not be made.
- The approximate excavation quantity is anticipated to be 200 cubic metres.

 

***H14 REMOVAL OF HOVIUS BRIDGE REMNANTS (STA. 4+230 INTERVAL 10)***

- At Sta. 4+230 on the South Canal (in Interval 10), a private bridge has been primarily removed by the landowner. There remains scattered wooden piers in the channel and the approach embankments to the old structure.
- The work by the Contractor will be to remove any remaining wood piers and to remove any embankment protrusions into the required canal cross-sections.
- All materials are to be disposed of similar to other specifications of the project. This will require removal of wooden piers off site and disposal of earth materials either by leveling where such is to be done in the adjacent area or to be hauled if materials are to be hauled in the adjacent area.
- Access is to be provided by the Hovius property to allow final removal on the building side of the canal.
- Measurement for payment will be by lump sum and is to include payment for access, excavation, pier removal, disposal, grading and restoration.
- The costs associated with this work are to be a non-grantable special benefit to the owner.

***H15 RELOCATE AND AVOID OLD HEADER DRAIN (INTERVAL 10)***

- The work required in this item is to prelocate and protect header drain that is part of a tile drainage system on the Hovius property between Stations 3+700 and 4+100± in the south canal.
- It is anticipated that this header drain is sufficiently south of the bank that the required widening of the canal to provide the 20 metre water surface will not affect such. However, prelocation and confirmation is necessary.
- If any of the lines should require relocation to accommodate the widening, the work to relocate the line will be paid on a time and material basis.
- The work under this item is only a lump sum item and it is for the prelocation and the avoidance of the drain.

***H16 PROTECT COMMUNAL IRRIGATION LINES (INTERVAL 10)***

- In Interval 10 there are two irrigation lines on the north bank/west bank of the existing canal that are to be protected during the cleanout and widening of the canal.
- It is not anticipated that any work will be necessary at these communal lines.
- This lump sum item is to be the payment for locating and the protection of such during the work.
- Should any damage be caused to these communal line inlets as part of the work, it will be the contractor's responsibility to attend to repairs as part of his costs or payment for canal cleanout.

***H17 BLANK***

***H18 ALLOWANCE FOR HYDRO LINE WORK (INTERVAL 11)***

- To the southwest of King Street, a private hydro line service exists to service the Kang and Tamasso properties. This service comes from the east across the canal and then runs between the dyke road and the west bank of the canal.
- It has been determined that this line will require temporary removal and reattachment to the poles during the canal cleanout work, or will require permanent relocation to allow the canal cleanout and future maintenance work.
- This item contains a lump sum allowance to allow for the reconstruction of this line.
- The final amounts to be paid under this item will be determined after consultation on site with a pole line contractor to determine what work is possible to allow canal cleanout and maintenance works to occur, and what the costs for such will be.

 

- It is possible that if the costs to relocate the line are excessive, that the work to be done under this item will be the removal of the line and the provision of temporary service on the surface of the ground during the canal works and then the reattachment of the line to the poles upon completion.
- If however the line can be relocated at reasonable costs, such may be done in order to better allow future maintenance of the canal.
- A further option may be to permanently bury the line on the inside of the dyke road.

***H19 ADJUST OUTSIDE DRAIN (INTERVAL 11)***

- At Station 5+040 south canal a 4" drain exists on the south bank of the canal.
- This lump sum item is to be reimbursed to adjust this drain to fit the new widened canal bank.
- The work will involve the placement of any inlet protection on the drain with provision of a freeboard to the drain and if possible recessing of the canal bank to protect the drain.

***H20 CONSTRUCT VALVE ON EXISTING IRRIGATION PIPE (INTERVAL 12)***

- The work required in this item is to provide a valve on the recently installed irrigation inlet on the northeast side of Keele Street and the north bank of the existing canal.
- The work is to include the supply and placement of a valve and the connection of the line to such.
- The valve is to be consistent with all other irrigation valves on irrigation lines in the marsh and is to be left in a closed condition upon completion of work.
- The unit price payment is to include the supply and placement of the valve.
- If it should be determined that valves are required on other lines of similar size (6, 8 or 10"), this item may be applied to the supply and installation of valves on the system at other locations.

***H21 46m OF NEW 50mm DIA. WATER LINE (INTERVAL 14) (SEE CSP I10)***

- The work to be provided here is to be in accordance with CSP I10. The work is to be done along the dyke side canal edge.
- This line is to replace an existing line that runs from the well in the canal bottom to an existing sleeve across the road.
- It is anticipated that the line will be damaged by the canal backfilling and a new line is to be constructed to be free from damage during the canal work.
- Payment will be on a lump sum basis.

***H22 BLANK***

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***H23 EXTEND LINES THROUGH STEEL PANELS OR PILINGS (INTERVALS 16 & 17)***

- At Stations 11+025 (Interval 16) and 12+025, 12+031, 12+045 and 12+057 (Interval 17), there are well outlet and irrigation lines that cross the South Canal Bank Road into the canal.
- At these locations it is anticipated that either a special guide rail construction involving steel panels or steel piling or a steel interlocking sheet steel wall will be constructed and it will be necessary to ensure that the well outlets or irrigation lines are continued through the new steel panels or pilings.
- The work under these lump sum items are to cut through the panels or pilings and to place the irrigation line through such into the canal and to attach either caps and/or flapgates to allow the irrigation line to be functional.
- If it is a drain outlet line, the end protection will be a flapgate and/or a check valve at the crock where the drain outlet commences as described in CSP D17 and D19.

 

- If it is a below grade line a valve is to be installed as per CSP D17 herein, if none exist, and if it is an above grade line, it is to have a cap or capping plate.
- If the line is a small diameter below grade line that is attached to a jet pump, no protection against backwater is required.
- The measurement for payment will be per unit of protection provided and is to be complete payment for the supply and placement of any cap, valve or flapgate involved.
- It is to be noted that the line at Station 11+025 in Interval 16 may be moved prior to or at the time of construction to be on the east side of Wist Road. Existing is on the west side.
- The work will remain the same in that any work to fit the line through any steel piling wall will be necessary and it will be necessary to ensure that the valve remains operable.
- The unit price at this location is to provide for any adjustment necessary in this valve.
- The work required at Station 11+100 in Interval 17 will be to extend the 250mm sleeve for irrigation through the wall. It is believed there is a 100mm irrigation line inserted through the sleeve and a cap or capping plate is to be placed on the sleeve and pipe and is to be secured to the steel piling wall.
- The work at Station 12+025 (Interval 17) should not involve any work in the piling wall since an earth cofferdam should be constructed at this location.
- At Station 12+031, the work is expected to involve only the cutting of the wall to allow a 15mm well outlet to discharge.
- The work at Station 12+045 is a 75mm drain outlet and it will be necessary either to add a flapgate or to add a check valve at the crock at the top end of this drain outlet.
- The work at Station 12+057 is a well outlet and it is believed that the only work necessary will be to cut through the piling wall and ensure that the outlet is provided.
- Wherever cuts are made through the piling walls to allow these drain outlets, the work necessary will be to weld or otherwise affix a plate to the wall so that a reasonably water tight opening exists for the line that crosses through the piling wall unless the cut in the wall can be made close to the circumference of the pipe inserted. Some type of rust protection/epoxy is to be applied to the cut steel at the line opening.

### ***H24 ADJUSTING ANCHOR WIRES AND POLES ON SOUTH SIDE OF CANAL (SEE CSP F7)***

- This will be a lump sum item and is to be done in accordance with CSP F7. It will be a lump sum payment to adjust the anchor wires to the pole that exists along the east side of Highway 400.

### ***H25 RECONSTRUCT/RAISE SOUTH CANAL BANK ROAD (INTERVAL 17) (SEE CSP E7)***

- This work has been covered by CSP E7 but the payment for such is to be under this item.

### ***H26 CONSTRUCT EARTH BERM COMPLETE WITH SEED (INTERVAL 17)***

- This work is to be undertaken in Interval 17 north of Highway 9 along South Canal Bank Road.
- The work is to involve the construction of a new earth berm to the south and east of South Canal Bank Road, commencing at the flare of South Canal Bank Road with Highway 9 and running between hydro poles and the edge of the road.
- The berm is to be constructed to provide a minimum top elevation of 220.9. It is to be constructed with non-organic materials, is to have a top width of 2 metres and 3:1 side slopes.
- Topsoils are to be stripped prior to the reconstruction of the berm and then be replaced at the surface of the berm.
- The berm is then to be seeded using the seed mix specified in CSP C4.
- The measurement for payment will be per lineal metre of berm constructed and is to be complete payment for stripping of topsoils, importing and placing of approved fill, grading of such fill,

 

replacing of topsoil and seeding, and is to include utility locates, traffic control, and blending to the existing embankments.
- The Engineer will mark out the centre line of this berm.
- It is to be noted that this item of work may be deleted and be replaced by a special guide rail construction. This decision will be made at the time of construction. If special guide rail is constructed in lieu of the berm, it will be under the Special Guide Rail item as described in CSP E6.

***H27 EXTEND CULVERT WITH 12m OF 750mm DIA. CSP (INTERVAL 17)***

- This is the work that will be necessary if the berm in Item H26 is constructed. There is an existing 750mm culvert below South Canal Bank Road just north of Highway 9 and it will be necessary to relocate the flapgate that is on this culvert and then to extend the culvert with 12m of 750mm dia. CSP to match the existing culvert size and to supply one coupler to join the culverts, and then to re-affix the flapgate to the new extension.
- Cleanout and grading of the roadside ditch may be necessary to facilitate the work.
- The measurement for payment will be a lump sum item and is to include the work to excavate for, to supply materials, to relocate valve and to backfill prior to berm construction.

***H28 REDIRECT ROAD DRAINAGE TO NEW CATCHBASIN (INTERVAL 17)***

- This is the work involved to provide for continuous drainage in the swale area between the new berm of Item H26 and the existing South Canal Bank Road to the new catchbasin to be provided as part of Item H29.
- The work will be a lump sum item and is to include the stripping of topsoils, the excavation of new roadside ditch parabolic shaped to the grade specified by the Engineer at the time of construction, the disposal of the material, the replacement of the topsoils and the seeding of the topsoils as per the seeding item referred to above.
- The work is also to include utility locates and traffic provisions.

***H29 CONSTRUCT NEW 900mm DIA. PLASTIC OR 600 X 1200mm CONCRETE CATCHBASIN ON EXISTING 750mm DIA. CSP (INTERVAL 17) OR CONSTRUCT 15m OF 600mm DIA. CSP WITH FLAP GATE THROUGH NEW BERM***

- This is the work required at the 750mm culvert that is shown to be extended in accordance with Item H27. This work will be necessary to provide an outlet for the drainage between the new berm and the existing South Canal Bank Road.
- Two options for work are given. One will allow a separate catchbasin to be constructed with a separate installation of 15m of 600mm CSP with a flapgate through the berm.
- The other option is to construct a 600mm x 1200mm pipe on the 750mm culvert that is extended.
- All catchbasin work is to involve concrete catchbasin components. The work is to include excavation for the setting of the catchbasin, fittings of pipe to the catchbasin, mortaring of such to the basin, supply and placement of birdcage grates on the catchbasins, backfilling with granular materials to avoid consolidation and grading of channels to such.
- The flapgate if to be provided is to be equivalent to the flapgate that exists on the existing 750mm CSP.
- A marker stake for the catchbasin will also be necessary.

***H30 TRAFFIC PROTECTION AND APPROVALS – ALLOWANCE ONLY (INTERVAL 18)***

- The sum of money provided in this item is to be the allowance for the cost of submissions to MTO to obtain encroachment permit for work along Interval 18.

 

- The work is envisioned to involve the preparation of a traffic plan together with a small report.
- The work may involve a site meeting with MTO personnel.
- The second component of this allowance is the cost of the materials, installation and operation necessary to comply with the encroachment permit to allow access for excavation and hauling works associated with Interval 18.
- Traffic control provisions at Highway 9 are also discussed under CSP E2.
- As indicated in E2, a separate negotiated lump sum price for installation and operation of the traffic control measures will be negotiated with the Contractor and will be paid out of this allowance.
- The cost of the work to prepare the traffic plan and to obtain the encroachment permit and to prepare or obtain the signs or other traffic control devices will be a special assessment to the MTO in accordance with Section 26 of the Drainage Act but the negotiated price with the Contractor to implement/place/move/operate the traffic control measures will be part of the overall project cost.

## I CONTINGENCY ITEMS

### *I1 INTERLOCKING STEEL SHEET PILINGS AT BRIDGES*

- Piling as wingwall construction on existing structures may be ordered by the Engineer at the time of construction.
- The drawings indicate the locations of the various structures that exist.
- Any layout work associated with the new pilings will be undertaken by the Engineer.
- The Engineer will also indicate the access routes to be followed to the Bridge. The Contractor will be required to construct a suitable access to the actual location of the piling work.
- The provisions of CSP A16a apply
- Driving methods are to be by percussion unless vibratory methods are pre-approved through trial work. Specifications for installation of interlocking steel sheet piling will apply including measurement for payment and items included.
- The measurement for payment will be per square metre of piling supplied and installed to the required cut off line and is to include all work re traffic control, utility locates, access, grade and alignment control and fitting to existing structure.

### *I1 CONTINGENCY FOR STEEL PILING TRIAL WORK*

- Where and when the Engineer indicates, the Contractor is to supply two 10 metre lengths of interlocking steel sheet piling and, in a trial location, is to install one by percussion methods and one by vibratory methods. The purpose of the demonstration or trial work is for the Engineer to appraise the effects of the two methods of installation on adjacent dykes and/or buildings.
- The Engineer will select a site that is level and alongside the canal and that has easy road access.
- The measurement for payment will be lump sum for the supply of the materials, the preparation of the site, the installation and then the removal of the materials at the completion of the trial work.
- The Contractor will retain ownership of the steel pilings and the tender price for this contingency item is to recognize this.

### *I2 CONTINGENCY FOR ENCOUNTERED METAL, RUBBER OR WOOD GARBAGE IN EXCAVATION*

- Wherever excavation for cleanout or new construction encounters old vehicles, or parts thereof, appliances or other steel, plastic, rubber, wood, concrete debris or anything other than earth materials, such are to be separated from excavated materials, and are to be hauled to and disposed at landfill sites.

 

- The measurement for payment will be per tonne of material disposed in accordance with landfill weigh tickets and is to be payment for loading, hauling, dumping and including tipping fees.

## *I4 CONTINGENCY FOR HAULING CONTAMINATED SOILS*

- This special provision contingency applies whenever excavated soils from a cleanout section are determined to be contaminated and are to be hauled away.
- It may also apply to soils excavated along a new canal alignment which are also contaminated and are to be hauled.
- The Engineer will conduct periodic sampling of sediments and soils to be excavated and will advise when such soils are not suitable for leveling or backfilling of canals.
- Under this contingency, the Contractor will be required to load and haul such contaminated soils to a suitable disposal site.
- The Contractor must locate an approved disposal site.
- The Contractor will be required to provide evidence that the disposal site is an approved site for disposal.
- The payment made will be on a per tonne basis.
- The tonnage will be based on weigh tickets that must be supplied from the disposal site.
- If disposal is at a location where such tickets are not provided, the Engineer will calculate the tonnage based on volumes of material that are moved and converted to a per tonne basis by the Engineer.
- The payment made shall be full reimbursement for loading, hauling, disposal and any tippage fees.

## *I5 CONTINGENCY SPECIAL PROVISION FOR SEEDING OF LEVELED AREAS*

- This special provision applies wherever the Engineer requires an area of leveling to be seeded. There are no areas indicated for such at this time on the drawings.
- Where an area is to be seeded, the Contractor is first of all to attempt to obtain seed and fertilizer where possible from the landowner. The landowner will be separately reimbursed for any seed and fertilizer supplied by the Board. It will not be the responsibility of the Contractor to do so.
- Where the landowner does not wish to supply the seed and fertilizer, he may dictate the seed mixture and fertilizer required and the Contractor is to separately submit invoices for supply of such with a 10% markup to the Board for separate payment.
- The area must be rough leveled, graded and prepared for seeding.
- The approximate maximum rates of seeding and fertilizer applications to be allowed for are as set out in CSP C4.
- The unit price in this item on a per hectare basis will be the work to pick up the seed and fertilizer (although the seed and fertilizer material costs will be separately paid), submit the bills for such, and then to place the seed and any fertilizer on the area required.

## *I6 CONTINGENCY SPECIAL PROVISION FOR WATERING*

- Water shall be supplied and applied to sod or seeded areas or to other areas as directed by Engineer.
- OPSS 571 “Construction Specification for Sodding” and all other OPSS and OPSD referenced in OPSS 571 shall apply.
- Each water truck is to be measured by the Engineer prior to its use and the volume shall be computed in cubic metres.
- Contractor is responsible for initial watering of all sodded and seeded areas and no payment will be made.
- However, all subsequent applications of water ordered by the Engineer shall be measured and paid.
- Any other watering required on the project will be paid as per this item.

- The initial watering shall be sufficient to saturate the ground or otherwise payment for subsequent loads will not be made.
- Measurement and Payment for supply and application of water shall be by cubic metre of water supplied.
- Payment shall include rental of water truck, purchase of water, hauling of water to site, and application of water.

## *I7 CONTINGENCY FOR SUPERNATANT PONDS*

- Adjacent to any sediment pond a separate pond having approximately 50% the dimensions of the sediment pond may be necessary.
- The purpose of these supernatant ponds is to receive any unacceptable liquid surface deposits that may accumulate on the sediment pond.
- These supernatant ponds shall be only in place to allow disposal of materials through evaporation or percolation.
- The transfer of materials from the sediment pond to the supernatant pond shall be by pumping or by skimming and transferring.
- The disposal of any materials from the supernatant pond remaining from evaporation or percolation shall be pumped and hauled away off site.
- The Engineer will indicate when supernatants are required to be transferred from the sediment pond to a supernatant pond.
- The Engineer will not require the initial construction of a supernatant pond but instead will only require it when it is evident that supernatants are accumulating in the sediment pond and such supernatant pond is necessary.
- There will be separate measurement for payment of supernatant ponds in accordance with the contingency item.
- The payment made is to include the time involved by the Contractor to travel to the site of the pond, to excavate it, to transfer liquids to it, to travel back to the work area, to dispose of any liquid that remains when the pond is to be filled and then to fill the pond.
- The Owner will pay for any hauling costs and any tippage fees as invoiced and at prices with a 10% markup.
- The measurement for payment will be for units of supernatant ponds constructed.

## *I8 CONTINGENCY FOR TREATMENT OF ROOTS AT CANAL DYKE INTERFACE TREES*

- This document requires trees along the dyke canal interface to be cleared where and as indicated.
- Other specifications indicate that the trunk remaining is to be cut flush to ground level and then is to be treated to restrict or prevent future growth from the trunk.
- The method to be followed to undertake this is to inject a product specifically manufactured to kill or retard future growth from the trunk. The product to be used is to be E-Z Sect or equivalent. The application is to be as per the manufacturer's recommendations.
- This work may be undertaken by the Board.
- If it is tendered, the payment will be for each root mass trunk that is injected as directed by the Engineer.

## *I9 CONTINGENCY TO GRIND UP ROOT MASSES IN LEVELING AREAS*

- This contingency item will apply where the Contractor is directed to grind root masses as part of the clearing operation for leveling areas.
- The work is to be undertaken by a Contractor with equipment specifically designed to grind root masses to approximately a depth of 300mm below ground surface.

 

- The measurement for payment will be on a per hectare basis and is to include all work to enter, grind root masses, level area when finished and leave site in existing condition.

## *I10 CONTINGENCY FOR REPLACING UNDERGROUND WATERMAINS*

- This work will be involved wherever it is necessary to replace an underground watermain that is to be buried and/or abandoned.
- The work involved will be to trench for the new watermain to a minimum depth of 1.5 metres, to supply and install 50mm diameter plastic watermain material (polyethylene 100psi rating), to couple to existing lines, to disinfect the new line and to pressure test the new line, and then to backfill to surface and to restore surface.
- The measurement for payment will be per lineal metre of work complete for excavation, supply and installation, backfilling, restoration, disinfection, pressure testing and connections.
- This item will also apply if smaller diameter watermain than 50mm is encountered. If larger watermains should be encountered, a negotiated additional payment will be made based on the material costs only.
- OPSS 503, 504, 514, and 701 will apply to such work.

## *I11 CONTINGENCY FOR EXCAVATING ROOT MASSES ON CANAL SIDE EDGES FOR GUIDE RAIL OR IRRIGATION WORK*

- This contingency provides payment for removing individual root masses wherever such interfere with guide rail post installation or irrigation line placement and where otherwise such would not have to be removed.
- The Engineer will determine at the time of construction whether such root mass is to be removed.
- In some cases, the mass is to be fully removed and in other cases it is to be cut only. This contingency item will provide payment per root mass that is to be cut or removed, in whole or in part, to allow for such work.
- Any removal of root mass must carefully consider the potential damage to the canal bank and it may be required to use shears to cut the root masses to avoid its full removal. Wherever possible the irrigation line will be shifted to avoid the work but this contingency allows for the work necessary.
- Where a guide rail post is to be inserted and auguring through a root mass is necessary in addition to normal guide rail procedures, payment will be made under this item for any auguring to allow guide rail post placement.
- Measurement for payment will be per root mass cut, augured, sheared, removed to allow work and will be payment in full for all works to mobilize and attend to the work and to dispose of materials and to leave a trench or hole into the root mass ready for the work necessary.

## *I12 CONTINGENCY FOR NEW FARM FENCE CONSTRUCTION*

- This contingency item will be applied wherever it is necessary to construct a new farm fence on the project.
- The fence work will be in accordance with the applicable OPSS for farm fence work and is to include all work to supply components and to install a fence.
- The Engineer will provide the layout.
- The work must be to the satisfaction of the landowner.
- Payment is to include for all works and will be on a per metre basis including end posts, brace posts and corner posts.

 

### *I13 CONTINGENCY FOR DUST SUPPRESSANT*

- In accordance with CSP B14, dust control will be paid as a separate contingency item when and where directed by the Engineer.
- The measurement for payment will be per tonne as evident from supplied weight tickets.
- The payment will be for the supply and the application of water unless alternate materials are preapproved.

## J GENERAL

### *J1 CONSTRUCTION YARDS*

- The Tender Documents will list a number of possibilities of construction yards that the Contractor may use.
- It will be the Contractor's responsibility to finalize any negotiations with respect to usage of construction yards.
- A Contractor may also undertake private negotiations with the landowner for the construction yard.
- Any agreements or understandings for such will be between the Contractor and the landowner.
- The Engineer's responsibility will be only to ensure that environmental and traffic concerns are recognized in any construction yard.
- Where a designated yard is provided, the Engineer will ensure that such is maintained and restored upon completion of activities.
- A Best Management Practice requirement for construction yards is included in this document.
- The construction yard shall be fenced (temporary fencing) and signed, shall be a minimum of 15m from any watercourse, and shall be constructed so as to maintain drainage.
- The Contractor is to provide a trailer and sufficient parking area and space on the yard for use by the Engineer.
- Specifications included in the Special Provisions apply to the services to be provided in the trailer for the Engineer.

### *J2 SPILLS RESPONSE TRAINING*

- As indicated in the spill prevention and response plan, the Contractor will be required to attend a spill prevention and response training program as arranged by the Engineer.
- All construction staff that may be involved with equipment operation or with any other aspect of the construction project are required to attend such training session.
- The session may be repeated during the construction season if required in the opinion of the Engineer.

### *J3 CO-ORDINATION WITH ONTARIO LAND SURVEYOR, ENVIRONMENTAL SUB-CONSULTANTS, BUILDING CONDITION INSPECTORS, IRRIGATION SPECIALISTS*

- The Contractor is to be aware that an Ontario Land Surveyor will be on the site from time to time to survey, reference and/or replace survey bars that are located.
- The Contractor is required to allow the Ontario Land Surveyor to attend to his required work with reasonable un-interruption.
- The Contractor is also to ensure that he protects any survey bar he knowingly encounters and is to notify the Engineer of its existence.
- Similarly the Contractor is to co-ordinate and co-operate with the Environmental Sub-Consultant who will be on site from time to time to take soils, sediment and water samples and to construct the transplants necessary.
- This coordination and operation also applies to those retained to inspect nearby buildings and to assist in irrigation work.

 

***J4 ATTENDANCE ON SITE BY DEPARTMENT OF FISHERIES AND OCEANS***

- The Contractor is advised that he is to co-operate with and allow review of site by DFO staff.

***J5 GPS SURVEYS BY ENGINEER***

- The Contractor is to ensure that the Engineer's staff is notified of all earth cofferdams that are constructed, and the Contractor is to co-operate to allow the Engineer's staff to GPS all such cofferdams.
- Also the Engineer will be required to GPS all irrigation and water lines and the Contractor is to ensure that the Engineer is given the opportunity to do such prior to backfill and that the Engineer has access to the site to do such.

***J6 COSTS FOR SPILLS KITS, TRAINING AND FUELLING***

- The Contractor is to ensure that his bid prices include the costs to attend to the provision of spill kits and the attendance to the spill response plan, and is to ensure that his tender includes for the cost to prepare and implement the fueling plan and to attend at the Spill Response and Prevention training sessions whenever set up by the Engineer.

***J7 WATER, SEDIMENT AND SOIL SAMPLING***

- The Contractor is to co-operate with the Engineer and his sub-consultants with respect to sediment and soil sample gatherings and with respect to taking water samples for turbidity and water quality.

***J8 UNATTAINABLE CROSS-SECTIONS***

- The Contractor is advised that the cross-sections shown by the Engineer are the design goals of the project and wherever possible the Contractor is to ensure that his work provides the required cross-section.
- The Engineer however reserves the right to modify the cross-section wherever he deems that soil conditions do not allow the required cross-section to be provided.
- Where the Engineer modifies a cross-section, the total end area for flow will not be reduced.

***J9 ALIGNMENT AND VERTICAL CONTROL***

- The Contractor will be required to ensure that his construction activities have alignment and vertical controls using laser and/or GPS methods.

***J10 SPECIES AT RISK, FIRST NATIONS ARTIFACTS AND/OR BURIAL GROUNDS***

- If any species at risk or First Nations artifacts or burial grounds should be encountered during construction, the Contractor is to follow the instructions of the Engineer regarding avoiding the area and moving to additional areas and reopening up the area encountered when and if he directs.
- Any reasonable additional costs related to such will be paid as part of the project.

***J11 UNACCEPTABLE WORK METHODS***

- Where the Engineer determines that any methods undertaken or proposed to be undertaken by the Contractor are unacceptable from an environmental, stability, traffic, safety or drainage concern, the Engineer may require the Contractor to modify his methods.
- No payment will be made for work that has been determined to be following unacceptable methods, after the Engineer has indicated that such are unacceptable.
- The Engineer may also require the correction of any work constructed by unacceptable methods.
- Where such requirement is made after notice has been given that such is unacceptable, there will be no payment for such correction if such should occur prior to notice being given, consideration will be given to payment as negotiated.

 

- The Engineer may retain others to correct such unacceptable work at the full cost of the Contractor and/or may provide deadlines by which time any unacceptable work is to be attended to with the efficiency necessary.

## ***J12 CONTINGENCY ALLOWANCE RE GENERAL ITEMS***

- At this time all General Items are included in the Contingency Allowances.
- A separate item for General Work will be created at the time of tendering.
- This document includes a number of items that are entitled “Contingency Items”.
- These items are created in CSP Section I to allow for payment for work that may or may not be involved.
- The payment for any work undertaken for a contingency item will be in accordance with the specific special provision related to such.
- The unit price payment evident will apply regardless of the extent of usage of the contingency item.

# PART II

# GENERAL SPECIAL PROVISIONS

# PART II GENERAL SPECIAL PROVISIONS

TABLE OF CONTENTS

**PART II**
General Special Provisions

## 1 ORDER OF PRECEDENCE

In the event of any conflicts or inconsistencies in the provisions of the plans and specifications of this document, such provisions shall take precedence and govern in the following order:

Form of Agreement
Addenda, if any,
Construction Special Provisions
General Special Provisions
Contract Drawings
Form of Tender
Information for Tenderers
Supplementary General Conditions
General Conditions

## 2 MINIMUM TRUCK HAUL RATES

Not applicable on this contract.

## 3 CONTROL OF DUST, MUD OR OTHER DEBRIS

It is the Contractor's responsibility to take all necessary precautions to keep dust, mud and other debris under control at all times within the contract limits and on roadways where vehicles are delivering or removing materials and/or equipment in connection with this contract.

All costs to keep dust, mud and other debris under control shall be borne by the Contractor, unless otherwise specified, except that water and calcium will be paid at the unit price in the form of tender. Control measures must be taken if so ordered by the Engineer and shall be carried out to the satisfaction of the Engineer.

If the control measures are not carried out to the satisfaction of the Engineer, the Owner may take the necessary steps to control dust, mud and/or other debris and all costs incurred will be charged to the Contractor.

## 4 SOILS INVESTIGATION

Tenderers shall make such additional examination of the soil as they may feel necessary to satisfy themselves as to the conditions that may be encountered and shall not hold the Engineer or Owner liable for any item in this regard.

See also Information to Tenders _____

## 5 EMERGENCY AND MAINTENANCE MEASURES

Whenever the construction site is unattended by the general superintendent, the name, address and telephone number of a responsible official of the contracting firm shall be given to the Engineer. This official shall be available at all times and have the necessary authority to mobilize workmen and machinery and to take any action directed by the Engineer in case emergency or maintenance measures are required regardless whether the emergency or requirement for maintenance was caused by the Contractor's negligence, Act of God, or any cause whatsoever.

## 6 WORK ON PRIVATE LANDS

Whenever work is to be done on private lands beyond the working area shown on the aerials a minimum notice of 24 hours shall be provided to the property owner or his representative.

It is suggested that a temporary plastic snow fence or continuous fluorescent survey ribbon be erected on the perimeter of working areas on private lands to ensure no encroachment on lands beyond the working area occurs since the Contractor will be liable for damages beyond the working area limits. The Owner, unless other satisfactory arrangements are made, will deduct from the holdback compensation for crop, tree and/or land damages for lands affected outside the working area and will pay such money to the landowner.

Wherever livestock may be affected by the work on private lands a suitable fence shall be erected or other suitable arrangements shall be made to prevent entry of livestock onto the working area.

## 7 MAINTAINING EXISTING DRAINS AND DRAINAGE

The Contractor shall replace or connect existing private drains, if found, to a point designated by the Engineer at the time of construction. The Contractor will be required to locate existing swales or drains in any areas where the location of such drains is required but is uncertain. The Contractor shall maintain the flow in existing drains at all times.

The Contractor shall complete connections to existing drains where such are know to exist using couplers and other necessary fittings and adapters. These connections shall not be backfilled until inspected and measured by the Engineer. Connections backfilled prior to inspection will not be approved or paid.

Any lateral drain that is carrying polluted water or shows evidence of carrying polluted water shall not be connected up and shall be reported to the Engineer. The Engineer shall decide on what shall be done with lateral drains carrying polluted waters.

The Contractor shall maintain ditches and watercourses for surface water drainage of

 

the site and external properties during construction, and bear the responsibility for damage that may result by reason of not doing so.

He shall incorporate appropriate sediment retention measures to ensure that sediment and other debris are not discharged to new catchbasins, to the adjacent ditches and watercourse.

## 8 PROTECTION OF SURVEY BARS

Preserve surveyor's monuments, standard iron bars, lot and easement bars and grade stakes. Accordingly, check the condition of these monuments and bars prior to occupying the site and mark all such points at his own cost to aid in preservation. Notify the Engineer of all survey bars found to ensure the Engineer is aware of such and has provided for their replacement or other recognition or referencing.

## 9 FENCES

All fences are to be rebuilt unless designated by the Engineer. Wire fences to be rebuilt are to be cut at the nearest corner or brace post outside of or at the edge of the working area are to be rolled back. For re-erection the fence is to be restretched and fastened to or better than original condition. If any existing wire fence cannot be replaced due to poor condition of material, new fence material may be authorized and at additional payment.

Other fences removed shall be re-erected using existing materials or at the contractors option new materials.

All fence work must meet the approval of the property owner and Engineer.

Fence work reconstruction is not separately measured or paid except where noted.

## 10 PERMANENT RECORD AND CONSTRUCTION SCHEDULE

Keep a permanent record on the site showing dates of commencement and completion of all trades and other work, daily weather conditions, excavations, formwork, concrete work and removal of forms. Keep in duplicate, daily records of the number of men engaged on the job and on each division of the work and make these available to the Engineer upon request.

Periodically prepare progress schedules in graphic form indicating the start and finish of each trade and deliver two (2) copies to the Engineer when requested. Keep one copy posted in the construction office and superimpose actual progress in contrasting ink.

 

## 11 INCLEMENT WEATHER

Make adequate protection and take precautions at times of inclement weather.

Inclement weather or extra work caused by such weather will not be accepted as reason for additional payment.

## 12 NOISE CONTROL

Adhere to local noise by-laws.

Equip vehicles and equipment with efficient muffler devices to minimize noise levels in the vicinity of the site.

Where necessary, place noise attenuation devices (barriers) around stationary pumps, compressors and other sources of noise.

## 13 MUNICIPAL STAFF

The Holland Marsh Drainage System Joint Municipal Services Board, Town of Bradford-West Gwillimbury, Township of King, Ministry of Transportation, County of Simcoe and the Region of York may have municipal staff on site at any time. If any requests, orders or directions are received from municipal staff, they should be referred immediately to the Engineer for his decision.

# PART III

# APPLICABLE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS

## PART III LIST OF APPLICABLE ONTARIO PROVINCIAL STANDARD SPECIFICATIONS

Ontario Provincial Standard Specifications (OPSS) Standards

182 Environmental Protection for Construction in Waterbodies and on Waterbody Banks
201 Clearing, Close Cut Clearing, Grubbing and Removal of Surface and Piled Boulders
206 Grading
209 Embankments over Swamps
405 Pipe Subdrains
503 Site Preparation for Pipelines, Utilities, and Associated Structures
504 Preservation, Protection and Reconstruction of Existing Facilities
506 Dust Suppressants
507 Site Restoration Following Installation of Pipelines, Utilities and Associated Structures
514 Trenching, Backfilling and Compacting
541 Chain Link Fence
552 Steel Beam Guide Rail and Cable Guide Rail
559 Guide Rail End Treatment – Steel Beam Energy Attenuating Terminal Systems
565 Protection of Trees
571 Sodding
572 Seed and Cover
577 Temporary Erosion and Sediment Control Measures
701 Watermain Installation in Open Cut
903 Deep Foundation
1860 Geotextiles

# PART IV

# GENERAL MUNICIPAL DRAIN SPECIFICATIONS

# PART IV GENERAL SPECIFICATIONS FOR THE CONSTRUCTION OF MUNICIPAL DRAINS

## 1. DRAINAGE WORKS - GENERAL

1.1 BENCHMARKS These are established to govern the elevations of the work. The location and elevation of benchmarks are shown on the drawings or in the specifications. Attention is drawn to Section 13(2) of the Drainage Act, RSO 1980, regarding liability for interference with benchmarks.

1.2 STAKES Stakes are set throughout the course of the work as shown on the accompanying drawings. The Contractor shall be liable for the cost of replacing stakes or marks destroyed during the course of construction.

1.3 LINE Unless otherwise specified, a drain shall run in straight lines throughout each course, excepting at the intersection of courses where it shall run on a curve of at least 15 metres radius. The centreline of an existing open drain shall in general be the centreline of the finished work; the existing courses shall be lined out by the Contractor and all sloping and widening shall be done in a manner to make the finished work uniform. Where possible and unless otherwise specified, the Contractor shall maintain a distance of 1.0m between the top of the excavated bank and any existing fencelines or property boundaries. Where a ditch bank is vegetated and stable at a side slope equal to or flatter than the specified side slopes, excavation shall take place at the opposite bank, leaving the stable slope undisturbed. In general, a tile drain shall be constructed at an offset from and parallel to any ditch or defined watercourse, in order that freshly placed backfill will not be endangered by flowing surface water.

1.4 PROFILE, GRADES & CUTS On the profile drawings, the top line indicates the ground level at the stakes, the middle dashed line the average ditch bottom of an existing open drain, and the lower line shows the proposed grade line. The grade line represents the bottom of the finished open drain or the invert of a tile drain. The profile grade is indicated in metres per hundred metres (e.g. 0.15m/100m or 0.15%). For convenience only, cuts are shown from the ground at the numbered side of the stake to the grade line, however the grade line shall be entirely governed by the benchmarks. A variation of 12mm from the grade line for a tile drain or 30mm from the grade line for an open drain shall be deemed to be sufficient reason for the work to be rejected (See Section 6 for rock excavation).

1.5 SUPPLY OF MATERIALS The Contractor shall supply and arrange for the delivery, storage and security of all equipment and materials necessary to complete the project. Where the contract provides that any materials are to be supplied by the Municipality, it shall be the responsibility of the Contractor to arrange for and accept delivery of the materials from the suppliers designated by the Municipality and to ensure that materials are properly stored and handled.

1.6 EXCESS MATERIALS If supplied by the Municipality, excess materials shall be stockpiled by the Contractor at accessible locations.

1.7 ROADS & RAILWAYS

(a) Highway and Railway crossings shall be constructed in accordance with the detailed specifications in the report. The Contractor shall comply with the MTO or Railway specifications as though said specifications were hereto attached (See Section 2.4).

(b) Municipal Roads - On road allowances, all work including the disposal of excavated materials, backfilling, leveling, installing and locating culverts and catchbasins, shall be performed as directed by the Engineer or Superintendent in charge of the road and to his satisfaction. Excess materials excavated on the road allowance shall be disposed of by the Contractor off the site and no excavated material shall be spread on the right-of-way without the written consent of the Road Engineer or Superintendent. Corrugated metal pipe culverts laid under the travelled portion of a road allowance shall be laid on 150mm of, and shall be backfilled to the surface with, approved granular material. The top lift shall be 150mm of Granular A material or as specified in the Extent of Work.

1.8 CONSTRUCTION OF ROAD CULVERTS BY THE MUNICIPALITY Where a road culvert is to be constructed by the Municipality or as outlined in Section 1.3, the Contractor shall dig the trench across the road as part of the contract. Additional time for removing old culverts or backfilling shall be paid by the Municipality on an hourly basis. The Contractor shall notify the Road Superintendent at least three working days prior to construction of the road crossing.

1.9 FENCES The Contractor will be permitted to remove fences to the extent necessary to enable him to construct the drain and dispose of any excess material. Any such fences must be carefully handled so as to cause no unnecessary damage and shall be replaced by the Contractor. The condition of such fences as replaced shall be as close as practicable to the condition of the fences prior to their removal. Fences shall be properly stretched and fastened. The Contractor shall supply all labour, wire and/or materials necessary to properly reconstruct any fences, the cost of which shall be included as a part of the lump sum bid for the project. The Contractor shall not leave any fence open when he is not at work in the immediate vicinity. Replacing of the fences shall be to the satisfaction of the Engineer, or the Commissioner appointed to be in charge of the work. The Contractor shall have met this specification when he obtains a statement in writing signed by the owners of the lands affected that the treatment of fences is satisfactory to them. The landowners shall be responsible for any further repairs to or maintenance of fences across the drain, as well as fences subsequently constructed along or across the drain.

1.10 OBSTRUCTIONS Any brush, timber, logs, stumps, stones or other obstructions in the course of the work or along the slopes and banks of an open drain shall be removed to a sufficient distance to allow placement and levelling of the excavated material. No brush or trees are to be left within the slopes of an open drain whether or not they come within the limits of the excavation. The Contractor will be permitted to cut standing timber to the extent that may in the opinion of the Engineer be reasonably necessary for the operation of the excavating equipment (See Section 4.3).

1.11 ALLOWANCES FOR DAMAGES & RIGHT-OF-WAY Sections 29 and 30 of the Drainage Act, RSO 1980, provide for payment to persons entitled thereto for additional land used for the drain and for damages to ornamental trees, lawns, fences, lands and crops. This allowance compensates landowners for damages caused by the normal operation of the Contractor's equipment within the working area and for damages resulting from the placement and spreading of excavated materials, brush and other obstructions.

1.12 ALLOWANCES FOR LOSS OF ACCESS Section 33 of the Drainage Act, RSO 1980, provides for payment for loss of access caused by the construction of a drain. This allowance is made in lieu of providing for the construction or replacement of a bridge, and compensates the landowner for lands made less accessible by the drain. Where an allowance for loss of access has been paid to a landowner, the Owner shall be responsible to arrange for the supply, delivery and installation of a culvert or bridge of the recommended size (See Section 4.7).Where the value of a farm crossing exceeds the value of the land severed, the Owner may be compensated by means of an "Allowance for Severance".

1.13 CROPS & LIVESTOCK The Contractor shall not be held responsible for damages to crops within the "working area" or in the access to and from such "working area", such access having been defined by the owner of the property, if he notifies the Owner thereof in writing at least two days prior to commencement of the work on that portion of the project. Similarly, a Contractor constructing a tile drain shall not be held responsible for damages or injury to livestock occasioned by leaving trenches open for inspection by the Engineer if he notifies the Owner in writing at least two days prior to commencement of work on that property. The Contractor will become liable for such damages or injury if the backfilling of such trenches is delayed more than seven days after acceptance by the Engineer. When notified as outlined above, the owner of the property on which the drain is located shall be responsible for the protection of all livestock on said property during construction and shall also be liable for any damages caused by such livestock.

1.14 WORKING AREA & ACCESS The Contractor shall confine the operation of his equipment to an area not to exceed 30 metres from any point along the centreline of the drain. This distance may be increased where 30 metres does not provide sufficient area for the levelling of excavated materials or the disposal of brush and other debris, but such an increase in the working corridor must be authorized by the Engineer. In addition, each landowner shall provide reasonable access to the working area for the Contractor's equipment, staff and materials.

## 2. OPEN DRAINS

2.1 DIMENSIONS In general, the bottom width shall be 1.0 metres unless otherwise specified. The drain shall have the full specified width at the grade line at the time of final inspection. Both sides of an open drain are to be sloped at a ratio of 2.0 units horizontal to 1.0 units vertical or as otherwise noted in the Extent of Work sheet(s). Sides of the drain shall have a uniform slopes from top to bottom. The upstream end of all open drains shall be graded at a slope of 4.0 units horizontal to 1.0 units vertical to blend with the surrounding ground level or upstream ditch bottom. The outlet of all open drains shall be shaped to blend with the downstream channel (See Section 4.16).

2.2 LEVELLING OF EXCAVATED MATERIAL

1. A clear berm or margin of at least two metres shall be left between the top edge of the ditch and the spoil bank. No excavated material shall be left in any ditch, depression, furrow or tile intended to conduct water into the drain.
2. Excavated material shall be deposited as directed in the Extent of Work.
3. Should the landowner request a change in the location of depositing the excavated material, the request must be in writing and forwarded by the Contractor to the Engineer. In no instance shall this request involve the changing the depositing location from one property owner to another.
4. In general excavated material will be placed on the lower side of the drain or on the side opposite trees and fences.
5. Excavated material shall be deposited, spread and levelled so that the edge next to the ditch shall have a slope no steeper than 1.5:1 and so that the lands on which it lies may be cultivated with adjacent farm land by the use of ordinary farm machinery. In general and unless otherwise provided for, the levelled material shall have a maximum depth of 200 millimetres. All rocks and stones of a diameter in excess of 150 millimetres are to be removed from the excavated material and piled adjacent to the drain for disposal by the landowner. This specification may be considered to have been complied with upon presentation of releases signed by the Owners, but the work shall be to the satisfaction of the Engineer.
6. The Contractor shall provide openings in the spoil pile for the entry of surface water into the drain from adjacent lands. These openings shall be located at existing surface water inlets and shall be constructed at a spacing of not more than 100 metres.

2.3 CLEARING Unless otherwise specified, the cleared width shall be sufficient to allow the levelling of the excavated material to the maximum depth of 200 millimetres and shall be a minimum of 3 metres from the top of the finished bank on both sides of the drain. Care shall be exercised to prevent the scraping or barking of trees outside the clearing area. All trees shall be removed to a height of not more than 150mm from ground level. All salvageable wood of a diameter greater than 100mm shall be cut to reasonable lengths and piled for disposal by the landowner. All other materials shall be burned or disposed of by the Contractor. The Contractor shall be responsible for obtaining fire permits prior to the burning of debris (See Section 3.10).

2.4 FILLING OLD CHANNEL Where a section of existing channel is to be excluded from the drain, the material excavated from the new channel shall be used to fill the abandoned channel unless otherwise indicated by the Engineer (See Section 5.11).

2.5 ROADS Where an open drain is removed from a road allowance, the new channel shall unless otherwise directed by the Engineer, be constructed entirely upon the adjacent land. The abandoned channel will be filled with excavated material and the excess material will be disposed of upon on the adjoining lands. Performance of this work is governed by Section 3.7.

2.6 EXCAVATION AT BRIDGES The Contractor shall excavate the drain to full depth, and as nearly as possible to full cross-section, at the site of all bridges. Bridges of a permanent nature shall not be unnecessarily disturbed, the excavation being made, if necessary, by hand or by other suitable means. The Contractor shall be held liable for any damage to any structure caused by his carelessness, neglect or over-excavation. The Contractor shall immediately notify the Engineer if it should become apparent that the excavation of the drain to the grades shown on the plan will in any way endanger any culvert or bridge. The Contractor shall discontinue excavation at the bridge site until the Engineer instructs him to proceed.

2.7 FARM BRIDGES & FARM CULVERTS Where the specifications and Extent of Work sheet(s) call for the installation of a farm crossing, and where an allowance for loss of access has not been paid to the Owner, the Contractor shall install a crossing as part of the contract (See Detail Drawing NE-7). Farm culverts shall be placed with the invert at the grade line, and shall be backfilled with suitable native material. The upper 200mm shall be Granular "B", and all backfill shall be compacted in place. Where it is necessary that the Contractor remove a temporary farm bridge in order to perform the necessary excavation, the material from the bridge shall be carefully handled and left at the side of the drain for the use of the owner. All farm bridges hereafter constructed or reconstructed, in order not to be regarded as obstructions, shall have minimum openings equal to the cross-sectional area recommended in the report (See Section 3.12).

2.8 EXCAVATION OF SOIL BY BLASTING Excavation by blasting shall not be done without the approval of the Engineer. Where blasting is approved as a method of excavation, the Contractor shall observe Section 6.6 and 2.16 of these specifications. The Contractor may be required to clean up the drain using equipment prior to final approval. No additional payment shall be made for excavation by blasting unless authorized in writing by the Engineer.

2.9 TRIBUTARY OUTLETS It shall be the Owners' responsibility to mark all tile outlets before construction on their property. The Contractor shall be responsible for any damage to marked tile and shall supply all labour and materials to repair any marked tile damaged by his workmen during the course of construction. The Contractor shall contact each Owner prior to commencing construction on each property to ensure that the Owner had adequate time to mark tile outlets. Damage to unmarked tile outlets shall be the responsibility of the Owner.

2.10 SURFACE WATER INLETS Where specified, the outlets from existing surface channels into open drains shall be protected with rock riprap as shown in Detail Drawing NE-11 (See Section 4.15).

2.11 BEAVER DAMS Beaver dams shall be removed for a width of 8 metres from the top of finished banks on both sides of the drain.

2.12 SEEDING OF SIDE SLOPES The Contractor shall seed the excavated surfaces of the drain and any disturbed soil area within 2 metres of the top of banks on either side of the open drain. Seeding shall be done at the completion of each working day using a cyclone type hand seeder with the operator walking along the bottom of the drain or at the water line when seeding the side slopes. Seed shall be uniformly applied at the rate of 5.5 kg per 100m of drain, using the following mixture ratio or a substitute approved by the Engineer:

| | |
|---|---|
| creeping red fescue | 6 parts |
| perennial rye grass | 3 parts |
| wild white clover | 1 part |

Mulching with hay or straw or the application of commercially available fertilizer may be required at the request of the Engineer, for which payment will be made in addition to the contract (See Section 4.16). Only Canada No. 1 Grade seed will be accepted. All clover and rye grass seed shall be of no less than 98% purity with a minimum of 85% germinable. Creeping red fescue seed shall be of no less than 90% purity with a minimum of 85% germinable. Where substantial emergence of applied seed mixtures has not been established within 28 days of application, the Contractor will reseed such areas as the Engineer may specify. The Contractor shall supply the Engineer with a copy of the seed invoice, showing the seed mixture, quantity, and the project for which the seed was purchased.

2.13 TEMPORARY SEDIMENT TRAPS Unless other dimensions are supplied, temporary sediment traps shall be constructed where specified by excavating the drain bottom to 0.3m below the grade line for a length of 15m (See Detail Drawing NE-1). The overexcavated section shall have a bottom width equal to that of the adjacent channel, and the sides shall be sloped at the same ratio as the drain banks. The outlets from the sediment pond shall have a porous dam of baled straw, completely wrapped in a continuous piece of filter fabric (Terrafix 270R or approved equivalent) and keyed into the drain banks and bottom. Bales placed on the drain bottom shall be held in place with a minimum of two steel posts driven into place. Bales placed on the side slopes shall be held in place with a minimum of one post each. The Contractor shall maintain the sediment trap during the course of construction and for six months after the completion of the work, and then

remove the dam. Temporary sediment traps shall be installed prior to any excavation taking place upstream of that location.

2.14 STONE DROP STRUCTURE & SEDIMENT BASIN The stone drop structure shall be constructed where specified in the Extent of Work sheet(s) and as shown on the profiles and Detail Drawing NE-2. All riprap shall have a minimum diameter of 250mm unless otherwise specified. The Contractor shall maintain the sediment basin formed behind the drop structure throughout the contract and for six months after the completion of the work. Stone drop structures shall be installed prior to any excavation taking place upstream of that location.

2.15 ROCK RIPRAP Riprap bank protection shall consist of irregularly shaped or blasted stone, 250 to 400mm in size. Round stone will not be accepted. All riprap, unless otherwise specified, shall be hand placed to a minimum depth of 250 millimetres. The installed riprap shall be set into the ditch bottom and banks so that the full cross-sectional dimensions of the channel are maintained. Where riprap protection is constructed on a surface at an incline steeper than 4 units horizontal to 1 vertical, the riprap shall be keyed into a 0.3 metre toe trench (See Detail Drawing NE-12). All riprap shall be underlain completely with Type 270R "Terrafix" filter blanket or an approved equivalent. Riprap placed as protection at catchbasins may be between 150 and 250mm in diameter, placed to a minimum depth of 200mm.

2.16 FALL & WINTER CONSTRUCTION When the Contractor constructs an open drain after September 15, the seeding of side slopes shall be delayed until after the spring runoff the following spring. In addition, the side slopes shall be flattened by an additional 0.25m horizontal to 1.0m vertical beyond that specified in Section 4.1 or the Extent of Work sheet(s). Under no circumstances shall the Contractor undertake to construct a project between the dates of January 1 and May 1, unless he has requested permission and is expressly authorized to do so by the Municipality or the Engineer.

2.17 FLOWING WATER The Contractor shall not excavate an open drain through standing or flowing water of a depth exceeding 0.5m.

## 3. ROCK EXCAVATION

3.1 ROCK Rock shall be defined as bedrock and boulders that are greater than one-half cubic metre in size and that require blasting for removal.

3.2 DIMENSIONS & PAY LIMITS FOR OPEN DRAINS The bottom width for rock excavation shall be the same width as that specified in the detailed specifications for the bottom width of that section of drain. Side slopes shall be vertical or sloped outward. Pay limits for the excavation of rock quantities shall be based on cross-sections taken at 3 metre intervals. The cross-sections shall be based on the following limits: the top shall be the original rock surface; the bottom shall be the grade elevation at the cross-section; and the sides shall be vertical with the width of the cross-section equal to the required bottom width of the drain. There will be no payment for overbreak.

3.3 DIMENSIONS & PAY LIMITS FOR TILE DRAINS For tile drains, the trench shall be excavated to 150mm below the grade elevation and to a width of 1.0m. Pay limits for the excavation of rock quantities shall be based on cross-sections taken at 3 metre intervals. The top shall be the original rock surface; the bottom shall be 0.15m below the grade elevation and the width shall be 1.0m. There will be no payment for overbreak.

3.4 GRADES & TOLERANCES On open drains, rock shall be excavated to the grade shown on the profile. A tolerance of 25mm above grade will be permitted over 50% of the width. In no case shall any part of the bottom of the drain be greater than 75mm above grade.
On tile drains, the top of the rock in the trench after excavation shall at no point be less than 100mm below the grade line.

3.5 DISPOSAL OF ROCK Broken rock excavated from the drain shall be piled adjacent to the drain and shall not be spread with the remaining excavated material. The Contractor shall ensure that blasted material is removed from adjacent farmland and placed adjacent to the drain or as specified in the report.

3.6 BLASTING All blasting shall be performed by a competent qualified blaster. Extreme care shall be taken for the transport, storage and use of explosives. All local bylaws shall be observed in addition to the provincial laws (See Section 2.15).

3.7 HARDPAN Hardpan consists of very dense, cemented or compacted material which cannot be readily penetrated with an excavator bucket. Unless otherwise instructed, the Contractor shall excavate hardpan to the full channel cross-section, and shall dispose of the excavated material off the site. Payment shall be based on the quantity of material excavated, and no payment shall be made for overexcavation. No payment shall be made for hardpan removal unless the Contractor has contacted the Engineer prior to excavation. The Engineer's decision concerning the classification of hardpan shall be final.

## 7.0 SPECIFICATIONS FOR PLASTIC TUBING CONSTRUCTION

### 7.1 General

7.1.1 The purpose of this construction Performance Practice is to define the minimum standard of work which the Ontario Ministry of Agriculture & Food considers satisfactory for the construction of subsurface drainage systems used to drain agricultural land.

7.1.2 All agricultural tile drainage systems must be installed in accordance with the Agricultural Tile Drainage Installation Act. The Act requires the licensing of tile contractors, their equipment and equipment operators. Landowners installing tile on their own property with their own equipment are exempted.

7.1.3 This Practice is not intended to be a complete specification since conditions vary in different parts of Ontario. Work conditions may dictate that other construction practices equal to or higher than this Practice be used to meet specific performance conditions. Landowners may impose additional requirements.

7.1.4 Workmanship, materials and methods of construction are to conform to suitable standards and practices. Where it is necessary to excavate a pit to observe the standard or workmanship or materials the owner or contractor is to make labor available to carry out this work.

7.1.5 Other sections in this Guide apply directly to the Construction section and should be reviewed before work is done.

### 7.2 Safety

7.2.1 Contractors shall comply with existing Provincial laws. Attention is drawn to the Occupational Health and Safety Act and Regulations.

7.2.2 Systems of work must be adopted and equipment used that are, so far as is reasonably practicable, safe and without risks to persons at work and others who may be at risk from the activities of persons at work.

7.2.3 "Call before you dig." Ensure the location and depth of underground utilities are known and marked before construction.

7.2.4 Persons working in a trench must be protected from cave-ins. Excavations must be safe and adequately supported. Persons should not work alone in trenches.

7.2.5 Moving parts of the drainage machine that may create a hazard must be protected by proper guards.

7.2.6 Casual observers should not be permitted close to construction operations.

7.2.7 Livestock should not be allowed in the field where construction is in progress or where trenches are open.

7.2.8 Safety barricades and warning signs should be erected by the contractor where the public has access to drain construction.

### 7.3 Inspection and Handling of Material

7.3.1 Inspection of material for drains should be made by the contractor before and during installation. All material should be satisfactory for the intended use and should meet the requirements as set forth in Section 6, "Materials" as well as any additional requirements placed by the owner.

7.3.2 Material should be protected from hazards. Care should be exercised during handling to avoid damage to the material.

7.3.3 Inspection Before Installation

.1 Upon delivery of material to a site, it should be examined for damage. Damaged or otherwise unsatisfactory material should be returned to the supplier.

.2 Clay, shale, and concrete pipe should not be subjected to flooding and should be stockpiled on boards or other suitable material to eliminate direct ground contact during periods of freezing and thawing.

.3 Coils of plastic pipe should be protected from damage and deformation by stacking the coils on their side, not greater than 4 coils high, on a level site, free of mud and sharp objects.

7.3.4 During Installation

.1 All pipes should receive a final inspection by the contractor. Defective or damaged

clay, shale, concrete or other rigid drain pipe should be rejected. Defective or damaged sections of plastic pipe should be cut out and the tubing joined in accordance with paragraph 7.12.5

.2 Where plastic tubing is to be used, ensure that perforated plastic tubing is installed, except as otherwise specified on the plan.

**7.4 Working Conditions**

7.4.1 Drains should be installed under favorable working conditions. Saturated land surface conditions and very wet soil profiles should be avoided until the watertable is low.

**7.5 Control of Direction**

7.5.1 Horizontal direction or alignment should be fixed by sighting guide targets.

.1 Lateral drains should be as straight and parallel as the topography will allow and where uniform depth can be maintained.

.2 The tolerance for horizontal alignment of lateral drain lines intended to be parallel is 3% of drain spacing.

7.5.2 Horizontal direction should be changed in such a way as to maintain the specified grade, not impede the flow of water because of excessive roughness, and allow tile joints to be fitted according to soil conditions.

7.5.3 Horizontal direction may be changed by one of the following methods:

.1 Construct the drain on a gradual curve so that the drainage machine can install the pipe in the trench while maintaining grade.

.2 Construct a gradual curve by shaving the inner side of the curve and chipping the drain tile; however, in no case should the radius of curvature be less than 1.5m

.3 Use manufactured bends or fittings so that the channel in direction is a smooth curve.

.4 Use junction boxes and silt basins.

**7.6 Control of Grade**

7.6.1 All drains should be installed to a predetermined grade and line. Accurate grade control must be constantly maintained during installation.

7.6.2 The constructed grade should be such that the drain as constructed will provide the capacity required for the drained area.

7.6.3 A variation in grade can be tolerated where the actual capacity of the drain exceeds the required capacity.

7.6.4 No reverse grade should be allowed.

7.6.5 Constructed grade should not deviate from planned grade by more than 15% of the internal diameter for drain sizes of 200mm or less, or 10% of the internal diameter for diameters greater than 200mm. These deviations are allowable, provided they are gradual over a distance of not less than 10m and do not occur both above and below grade in any 30m length of drain.

**7.7 Laying Pipe - General**

7.7.1 The method of installation must be compatible with the drainage system design and the existing soil conditions.

7.7.2 Pipe are to be laid to a true line and gradient on a firm bed, free from loose soil. Pipe are not to be laid on soil backfill or in slurry and are to be securely positioned to avoid displacement before backfilling the trench.

7.7.3 The inside of the drain pipe should be kept clean during construction. All soil and debris should be removed before additional pipe is laid.

7.7.4 Corrugated plastic drain tubing is affected by temperature.

.1 At colder temperatures, plastic tubing stiffness increases and flexibility decreases, care must be taken when rolls are uncoiled.

.2 At very warm temperatures plastic tubing may deflect excessively, care must be taken when handling under such conditions

7.7.5 Plastic tubing should not be stretched by more than 7% of its normal length

7.7.6 In all soils the opening between clay or concrete tile should be wide enough to permit entry of the design flow but small enough to prevent entry of soil.

.1 The maximum joint spacing should be 3mm except where special conditions indicate a wider spacing

.2 Where joint spaces between adjacent drain tiles exceed those in 7.7.6.1 as on the outer side of a curved drain, joints should be covered with a protective material

.3 Perforated drain pipe should be laid with the greatest number of perforations closest to the bottom of the drain, or the drain should be deeper.

7.7.7 When rock is encountered at grade level, the trench should be excavated approximately 75mm below grade level and filled to the planned grade as described in paragraph 7.7.8.

7.7.8 When the trench is excavated below design grade it should be filled to grade with small gravel or well pulverized soil tamped sufficiently to provide a firm foundation for the pipe.

7.7.9 Directional changes in plastic tubing can be made without the use of fittings, provided the centerline radius of the bend is not less than five times the tubing diameter.

**7.8 Laying Pipe - Open Trench Installation**

7.8.1 Drain trenches are to be cut to the specified depth, true to line and gradient and the trench bottom shaped so as to bed, fit and secure the drain pipe.

.1 Construction of the trench should normally start at the outlet and proceed upgrade.

7.8.2 The width of the trench measured at the top of the pipe should permit drain pipe to be laid with sufficient clearance between the wall of the trench and the pipe that blinding material will fill the space under the haunch of the pipe and provide adequate lateral support for the drain pipe.

.1 The minimum clearance on each side of the pipe should be 75mm

.2 Special precautions may be required to protect pipe against failure by deflection when laid in wide trenches (see 2.15.8 - OMAF Publication 29)

7.8.3 Drain tubing must be installed so that surface and earth loads do not deflect the tubing by more than 20% of its nominal diameter.

7.8.4 A suitable plug must be provided at the upstream end of each pipe to prevent entry of soil into the drain.

**7.9 Laying Pipe - Plow Installation**

7.9.1 Drainage plow equipment should construct a smooth bottomed opening in the soil and maintain the opening until the flexible tubing has been properly installed.

.1 The size of opening in the soil should conform closely to the outside diameter of the tubing

7.9.2 Pipe must be protected form deformation and from floating in wet trenches until it has been properly laid and blinded.

**7.10 Construction in Non-Cohesive Soils**

7.10.1 When non-cohesive soils are encountered, special construction features are required depending upon the type and conditions of the soils. Non-cohesive soils include fine sand and possibly some silt.

7.10.2 Where the trench wall is unstable or fluid soil conditions exist in the saturated silt or sand the pipe may fail to maintain alignment by caving of the trench sidewalls and misalignment of pipe. Floating of tubing may occur. A means must be provided to protect the pipe until the drain has been properly laid and blinded.

7.10.3 Where the trench bottom is unstable such as in fine sandy soil extreme care must be taken to keep sediment from entering the drain and to provide a firm foundation for the pipe.

**7.11 Existing Drains**

7.11.1 Existing drains which are satisfactory are to be directly connected to the new system.

7.11.2 Unless superceded by the new drains, older drains which might carry water may be indirectly connected to the new drain with permeable fill carried up or down to the level of the old drains.

**7.12 Connections**

7.12.1 Lateral drain pipes should connect with main drain pipes so that their centre lines intersect.

7.12.2 Drains carrying sewage or farmstead wastes shall not be connected to the drainage system.

7.12.3 Manufactured "T", "Y" or elbow fittings should be used for connections at the junction of two drains.

.1 Plastic tubing connections to rigid drain tile should be made with manufactured plastic adapters.

.2 Plastic tubing connections to plastic tubing should be made with manufactured plastic fittings.

.3 Each connection should be made with a specially manufactured connector, except when silt traps and inspection holes are provided at the location.

7.12.4 All fittings must be compatible with the pipe used.

7.12.5 Where lengths of plastic tubing are to be joined, the ends should be cut square and all ragged or burred edges removed. A plastic coupling should be used to secure the ends of the tubing in proper alignment and secured to prevent the joint from separating during installation.

7.12.6 Lateral drains, connected to main drains through cutting a hole in the drain wall, must not protrude into the main drain and obstruct the flow of water.

**7.13 Connections to Municipal Drains**

7.13.1 Each connection to a closed municipal drain must be approved by the local municipality responsible for the drain (Reference: The Drainage Act, RSO 1990, s.66.)

7.13.2 Lateral drains should not be directly connected to a municipal drain, except through a sub main.

7.13.3 Any connection to a municipal drain must not obstruct the flow of water in the drain.

7.13.4 Pea stone backfill should be used around connections for structural support.

**7.14 Filling the Trench**

7.14.1 There may be a requirement to inspect the drain prior to blinding and/or backfilling.

.1 Any required drain pipe protection material such as filters or envelopes must be installed before blinding.

7.14.2 Drain pipe should be blinded by placing selected material not more than 40mm in size, preferably topsoil, where ochre is not suspected, around the pipe to a minimum depth of 75mm above the top of the pipe.

.1 Open trenches should be blinded by the end of each day.

.2 Plastic tubing should be blinded before being backfilled where bulk dumping of backfill into the trench is practised.

.3 Automatic blinding and backfilling in one operation can be used where the soil is suitable.

.4 Where the drain pipe may be subject to frost before being backfilled, the minimum depth of blinding should be 150mm.

.5 Plastic drain tubing should be blinded immediately after installation to hold it in position on planned grade and alignment, and for protection of the tubing during backfilling.

.6 Compaction of the bedding and blinding material along the side walls of the pipe is beneficial for pipe diameters over 250mm.

.7 Stones in the blinding material should not contact the drain pipe.

.8 On steep grades, or where the topsoil contains fine sand; loam or clay soil (if available from the sides of the trench) should be used as blinding material.

7.14.3 Trenches should be carefully backfilled with excavated material placed in such a way that the pipes are not damaged or displaced.

.1 At the end of each day's work the exposed end of the drain line should be covered to prevent entry of debris or sediment in the event of rain.

.2 The fill should be firm but not compacted so much that it prevents the passage of water to the pipe.

.3 All trenches should be filled to a level sufficiently above the surface of the ground to allow for settlement.

.4 Backfilled trenches should not be compressed.

**7.15 Site Clean-Up**

7.15.1 Surplus soil which is not of an injurious nature should be spread over the surrounding field. Material such as large stones, roots, etc., likely to damage implements or livestock, or of a size and

character abnormal to material found on the surface of the field, should be removed.

7.15.2 The Contractor should arrange to remove surplus pipe material, bands and ties, wood, glass metal cans and containers and other trash from the work area as agreed with the owner.

7.15.3 Fencing and other farm property should be repaired or replaced as agreed with the owner.

**7.16 Inspection**

7.16.1 Inspection(s) should be made during construction to ensure conformance with plans and specifications.

7.16.2 For inspection purposes, during the progress of the work and upon completion, the Contractor shall provide such equipment that may be required for the inspection.

.1 Inspection pits should be excavated at selected points, preferably one or two per hectare. Additional pits may be required if the installation is faulty.

.2 Other means adopted by the contractor to demonstrate that the pipes are being laid to proper line and grade may be accepted in appropriate cases.

7.16.3 The following items should be inspected:

.1 Quality of pipe (Sec. 6 - OMAF Publication 29)

.2 Drain location (Sec. 7.5)

.3 Pipe depth and grading (Sec. 2.16 - OMAF Publication 29 and 7.6)

.4 Trench width at top of pipe (Sec. 7.8.2)

.5 Joint spacing and alignment of drain tile (Sec. 7.7.6)

.6 Laying pipe (Sec. 7.7 - 7.9)

.7 Connections (Sec. 7.12)

.8 Blinding (Sec. 7.14.2)

.9 Backfilling (Sec. 7.14.3)

.10 Filter envelope, stabilizing materials and placement (Sec. 6.6 - OMAF Publication 29)

.11 Outfalls (Sec. 3.5 - OMAF Publication 29)

.12 Auxiliary structures (Sec. 3.0 - OMAF Publication 29)

.13 Recording of alterations to the original plan (Sec. 2.8.3 - OMAF Publication 29)

7.16.4 If a drain is not constructed to the specifications, a completely new length of drain pipe should be laid with no attempt at remedial measures.

**7.17 Outfall Structures**

7.17.1 Drains that discharge into a ditch should be protected by a length of continuous rigid, non-perforated end pipe (Sec. 3.5- OMAF Publication 29).

.1 The end pipe should be installed as soon as the trench is constructed.

.2 Diameter of the end pipe should be as shown in Table VII- OMAF Publication 29.

.3 A grate should be attached to the end pipe at the time of installation; grate openings should not exceed 25mm.

.4 The outfall should be a minimum of 300mm above normal water level and should extend beyond the toe of slope.

.5 Erosion at the outfall must be controlled.

.6 Backfill at the outfall should be placed in 75mm layers and tamped well for a distance of 5m from the outfall to the same density as the surrounding soil.

.7 The joint between drain pipe and end pipe should be securely sealed.

.8 A subsurface drain should be offset from the centre line of a surface watercourse by one-third the width of the watercourse.

.9 Geotextiles should be placed under bank erosion control materials for drainage and stability.

.10 Where a surface watercourse must enter the ditch at the same location as a subsurface drain, an erosion control structure should be installed.

.11 In areas where fine sand or iron compounds may enter a drain it is preferable that each drain have an individual outfall.

F.4a)

# STANDARD SPECIFICATIONS

for

# DRAIN CROSSINGS

# BY THE BORING AND JACKING METHOD

## F.4a) STANDARD SPECIFICATIONS for DRAIN CROSSINGS by the BORING AND JACKING METHOD

This specification covers the requirements for the installation of pipes by jacking and boring. This specification shall be read along with the construction notes (special provisions) included on the drawings.

F.4a.1 The authority having jurisdiction over the lands or roads involved with the crossing will supply no labour, equipment or materials for the construction of the crossing unless otherwise stated.

F.4a.2 The pipe or casing used in the crossing shall be smooth wall welded steel pipe with a minimum wall thickness as specified in the special provisions and/or estimate of quantities.

F.4a.3 The pipe shall be of sufficient length so that during placement no part of any excavation shall be closer than three (3) metres to the edge of pavement, shoulder or ballast of the embankment being crossed. Excavation slopes shall be no less than one (1) metre vertical to one (1) metre horizontal (1:1).

F.4a.4 The pipe or casing shall be placed by means of continuous flight augering inside the casing and simultaneous jacking to advance the casing immediately behind the tip of the auger. Pipe when installed shall match the invert elevations and grade as shown on the profile on the drawings. Installed pipe not matching the grade and invert elevations specified may be rejected by the Engineer in whole or in part. Any work required to correct unacceptable variation in grade or invert elevations shall be the responsibility of the Contractor.

F.4a.5 The location of the bore pit to accommodate the boring machine shall be as specified in the special provisions and if not specified shall be confirmed with the Engineer prior to commencing construction. The bore pit shall be excavated so that the top edge of the pit shall not be closer than three (3) metres to the edge of pavement, shoulder or ballast of the embankment being crossed. The bank slope of the pit shall not be steeper than one (1) metre vertical to one (1) metre horizontal (1:1). Shoring, sheeting, or other trench support if required shall be in accordance with the applicable and most recent Provincial Statutes. No additional payment allowed for trench wall support within the bore pit unless approved by the Engineer due to unstable subsoil.

The pit shall be left open for an absolute minimum length of time. If possible, work should be scheduled so that excavation, placement of pipe and backfilling takes place in one working day. If this is not possible, every effort should be made to schedule the work so that the pit is not left open for more than one (1) day before and one (1) day after the boring. If a bore pit is left open for more than one (1) day the bore pit shall be secured by the Contractor when work is not underway. Method of securing the bore pit shall be approved by Engineer and the authority responsible for the lands on which the bore pit is located. No additional payment allowed for works required to secure the bore pit.

Dewatering of the bore pit is the responsibility of the Contractor and no additional payment will be allowed for dewatering. If unstable subsoil is encountered in the bottom of the pit a crushed stone base shall be placed to provide a stable base for the boring equipment. No additional payment will be allowed for placing a crushed stone base except for the material cost of the crushed stone, if the need for a crushed stone base is confirmed with the Engineer prior to placing the crushed stone. Weigh tickets and or suppliers invoice will be required for payment approval.

F.4a.6 During excavation all topsoil shall be separately stripped and saved for replacement on completion of the backfilling operation. If this is not possible or practical, the Contractor shall import and place a minimum of one hundred & fifty (150) millimetres of good quality topsoil over all backfilled and disturbed areas. The finished work shall be left in a clean and orderly condition flush or slightly higher than the adjacent ground so that after settlement it will conform to the surrounding ground. Excess earth (if any) shall be disposed of as directed by the Engineer and no additional payment will be allotted for such work. Disturbed areas to be seeded after placement of topsoil in accordance with specification for seeding included on the drawings.

F.4a.7 No construction equipment is to be operated on the shoulders or asphalt of the road without the prior approval of the road authority.

The Contractor shall, at his expense, supply, erect and maintain suitable and adequate barricades, flashing lights, warning signs and/or flagmen to the satisfaction of the Engineer and the authority responsible for the lands being crossed.

F.4a.8 THE CONTRACTOR SHALL GIVE THE AUTHORITY RESPONSIBLE FOR THE LANDS OR ROADS BEING CROSSED AT LEAST THREE (3) DAYS NOTICE BEFORE COMMENCING ANY WORK ON THE CROSSING.

F.4a.9 The Contractor shall be fully responsible for availing himself of, and satisfying, any further specifications that may apply to borings affecting the authority having jurisdiction over the lands or roads involved with the crossing.

If any permits are required for the crossing they will usually be applied for by the Engineer and made available to the Contractor before commencing work. The Contractor shall not commence work until he has determined from the Engineer whether or not any permits are required.

F.4a.10 <u>Material</u>

All pipe shall be new and be manufactured from steel according to ASTM A252, Grade 2 Steel. Pipe ends shall be bevel edged on the outside to an angle of 30 degrees for butt weld splicing and the exposed ends shall be treated with a rust inhibitor.

Pipe and thicknesses shall be as specified in the drawings and in the estimate of quantities.

The following information shall be clearly marked on the inside of each section of pipe:

1) The name or trademark of the manufacturer.
2) The heat number.

F.4a.11 The following additional specifications apply:

1. Borings in general should be done from the high side of the crossing.
2. Contractor is responsible to notify Engineer if any rocks are encountered creating voids and is to have equipment/lines in place to pump in concrete to fill voids where necessary.
3. Contractor is also responsible to notify the Engineer if poor soils are encountered which could create road or embankment instability and is to stabilize conditions immediately and to cease other work until revisions are set out.
4. Any borings with reverse grade may be rejected in whole or in part.

F.4b)

# STANDARD SPECIFICATIONS

**for**

# DRAIN CROSSINGS

# BY THE HORIZONTAL DIRECTIONAL DRILLING METHOD

## F.4b) STANDARD SPECIFICATIONS for DRAIN CROSSINGS by the HORIZONTAL DIRECTIONAL DRILLING (BORING) METHOD

Horizontal Directional Drilling (Boring)

All work is to be undertaken in accordance with the following directional boring specification:

1. Pipe to be HDPE SDR 32.5 or galvanized Schedule 40 steel pipe as specified.
2. Receiving and exit pits to be constructed and staging area to be secured with owners' approvals and after utilities are located. Dewatering to be provided if necessary.
3. Slurry pit to be provided if necessary.
4. Pit to be provided to disconnect drill from product on pullback.
5. Pipe to be fused as necessary.
6. General contractor and/or boring contractor to attend to all work items.
7. All surveying and spotting of the bores is the responsibility of the contractors.
8. Disposal site for drilling fluid, cuttings to be arranged/secured by the contractor(s).
   Portions of the pipe may be installed by open cut if the trench does not affect the surface platform and the road authority agrees with such.
   The Contractor will be responsible for any damage which may occur to the road or embankment due to unstable soils during the boring procedure. Any borings with reverse grade may be rejected in whole or in part.

The following additional specifications apply:

1. Signing to be erected, if required, on the roadway at each crossing advising of construction work ahead. Signs and layout pattern to be approved by the road authority. Speed zone signs are not necessary.
2. Topsoil to be fully saved and replaced with the right-of-way. Seeding of green areas is required. Compaction of backfill in bore pit is required.
3. Road authority to be notified 72 hours in advance of the start of any construction.
4. No construction equipment is to be operated on the shoulders or asphalt of the road without prior approval of the Road Authority.
5. Payment is by lump sum and will be made upon successful and acceptable boring.
6. Underground Bell lines and other utilities will have to be located and protected.

# Part V

# Supplemental General Conditions

# PART V SUPPLEMENTAL GENERAL CONDITIONS

Note: Description in brackets (GC 3.01) is the General Conditions section and subsection that is amended/extended by the given Supplemental General Condition.

## 1. The Engineer, The Corporation

The word "Engineer", "Consulting Engineer", and "Consultant" in this document shall be interchangeable with the word "Contract Administrator". The Engineer means K. Smart Associates Limited and their duly authorized agents.

The word "Owner" or the word "Corporation" shall mean the Holland Marsh Drainage System Joint Municipal Services Board (HMDSJMSB).

## 2. Locations of Existing Utilities (GC2.01)

Further to Section 2.01.01(a), the position of pole lines, conduits, watermains, and other underground and overground utilities and structures is not necessarily shown on the Contract drawings, and, where shown, the accuracy of the position of such utilities and structures is not guaranteed. Before starting work, the Contractor shall inform himself of the exact location of all such utilities and structures, and shall assume all liability for damage to them. Unless otherwise specified, the Contractor shall support all such utilities and structures, or temporarily remove them, and restore them to the satisfaction of the owners of the utilities and structures.

The Contractor must exercise necessary care in construction operations to safeguard existing and relocated overhead and underground utilities from damage and the Contractor will be liable for all damages to same and must pay all cost of repairs and/or replacement.

The Corporation will be responsible for any necessary permanent relocation of utilities but the Contractor will be responsible for any temporary relocation of utilities that may be required. The Contractor shall notify the Engineer when and where any necessary permanent relocations of utilities are required.

In the event that all necessary permanent relocations of utilities have not been completed prior to the time when the Contractor commences the work, the Contractor will be required to cooperate with the utilities companies and work around the utilities so that the existing services are protected until such time as such relocations are completed. No claims for extra payment will be allowed for this requirement.

 

During the course of this project, it may be necessary for Bell Canada, Enbridge Gas and Hydro One to carry out relocation of their underground and overhead plant. The Contractor shall be required to facilitate these relocations, to cooperate with scheduling to the greatest extent possible, and to carry out his work so as not to interfere with utility relocation/installation work that may be in progress at the same time.

**3. Hours of Work (GC3.01)**

Further to Section 3.01, the Engineer or Corporation may prohibit the Contractor from carrying on operations during any hour or hours of the day or any statutory holiday in which the Engineer in his judgment, deems such operations to be a disturbance or nuisance to the public. The Contractor shall be required to give 48 hours notice in writing of his wish to work on restricted days such as Sundays or Statutory Holidays. Such prohibition may be made notwithstanding any prior consent, order, agreement or requirement in the Contract that stipulates maximum or minimum hours or work.

Work shall take place on any working day only between 7 a.m. and 7 p.m. unless extended hours for specific dates are expressly authorized in writing by the Engineer.

**4. Progress of the Work and Time for Completion (GC 7.01)**

The work under the contract must commence on the day stated in the Schedule of Construction, and must be diligently prosecuted in general accordance therewith, so that the work is completed by the date of completion as stated in the Form of Tender. Work can not continue with respect to any work that impacts water due to Fisheries requirement of no work between March 30 and June 1.

The contractor may work with additional crews or augmented crews during working hours as may be required and as are approved by the Engineer to insure that the work will be completed within the time limit specified, and no additional compensation will be allowed therefore.

**5. Delays (GC3.07)**

All damage, loss, expense and delay incurred or experienced by the Contractor in the execution of the work, by reason of any items listed in Section GC 3.08, shall be borne by the Contractor and shall not be the subject of a claim for additional compensation, but extension of contract time will be granted in accordance with Subsection 3.06, Extension of Contract Time in the period following June 1.

**6. Changes in Work (GC3.10)**

The Owner shall not be liable for the cost of additional work or material which are supplied by the Contractor but which are not provided for in the Contract Documents, and which were not required by the written instructions of the Engineer or the Owner.

**7. Detail in Notices to the Contractor (GC3.11)**

In any notice to the Contractor with respect to work and repairs of any nature required to be done under the Contract (or with respect to any other matter), it shall not be obligatory for the Engineer to specify minutely and in detail everything required, nor to specify by measurement the exact extent or place where the work and repairs are to be carried out. Reference may be made in such a notice to the clauses in the Contract bearing upon the matter, the general location, and the general description of the work and repair to be done.

**8. Supply of Materials (GC 5.01)**

The Owner will not supply any materials except where specifically stated.

**9. Occupational Health and Safety Act (GC7.01.07)**

The Contractor also acknowledges that the Contractor is the Employer within the meaning of the Act. The Contractor will be deemed to have allowed for the responsibilities under the Act in the Tendered Prices.

**10. Layout (GC 7.02)**

The Engineer will establish temporary benchmarks and will identify alignment control points such as legal survey bars within or adjacent to the working area of this Contract.
The Contractor shall provide all other layout of line and grade of the proposed works.

Layout shall include setting of points and stakes as necessary to set the location, alignment, elevation and grade of all works.
The Contractor will be solely responsible for the correctness and accuracy of layout.

Geographic positioning system and lasers shall be used for grade and alignment control.

**11. Use of Private Lands (GC 7.03)**

For purposes of Section 7.03, the working area shall be deemed to consist of road allowances and designated working areas on the aerial drawings or as described by text. If it is necessary for the Contractor to enter private lands other than the working area, the Contractor shall first obtain the landowner's written permission and shall assume responsibility for all claims that may result.

The Contractor will be required to provide a letter from the owner and/or owners of property adjacent to the work or on which the work was constructed, clearly stating that the reinstatement work carried out by the Contractor is satisfactory. This letter of release will only be required where damage has been caused to private property or where work takes place on private property or easements.

**12. Variation in Tender Quantities (Major Items) (GC 8.01.02)**

There shall be no major items on this contract.

**13. Advance Payments for Materials (GC 8.02.02)**

There shall be no advance payments for material on site.

**14. Certificate of Subcontract Completion (GC 8.02.03.02)**

There will be no Subcontract Certification on this project.

**15. Progress Payments and Holdbacks**

Section GC8.02 of the General Conditions is amended by the following:

i) All payments, holdbacks and releases of holdbacks shall be subject to the Construction Lien Act and the conditions set out in Section GC8.02 of the General Conditions and the additional conditions listed below.

ii) The Owner will issue one copy of a progress payment certificate and payment cheque every four weeks. These progress payment certificates will be subject to a holdback in the amount of fifteen percent (15%) of the total estimated value of work completed to date. Work not done would have no payment at this time.

iii) Forty-five (45) calendar days after acceptance of the completed work, provided that no claims have been filed in accordance with the Construction Lien Act, the Owner will issue an up-to-date payment certificate and reduce the holdback to five percent (5%) of the total estimated value of the work.

iv) Within 5 months after acceptance of all completed work, provided that no claims have been filed in accordance with the Construction Lien Act, the Owner will issue a final payment certificate and deliver a copy for the contractor's approval of the payment quantities and values stated therein.

v) Final payment, including release or further reduction of all holdback, will be made by the Owner to the contractor within thirty days after the contractor has submitted the following documents:
   a) one copy of the final payment certificate on which the contractor has signified approval of the quantities and values contained therein.
   b) the contractor's statutory declaration that all sub-contractors and suppliers have been paid
   c) signed releases from owners of all private property used by the contractor during construction of the work
   d) a Workers' Compensation Board Clearance Certificate
   e) a Standby Irrevocable Letter of Credit, in favour of the Owner, from an Ontario chartered bank, as further described in the subsection following.
   f) proof of insurance for the term of the guarantee period.
   g) proof of publication of certificate of substantial completion

vi) Prior to final payment, the contractor shall provide to the Corporation a standby irrevocable letter of credit in the amount described as follows:

| Contract Price | | Value of Maintenance Security |
|---|---|---|
| From $ | To $ | |
| Less than 0.1 M | | 4% of Final Contract Price |
| 0.1 M | 0.5 M | 4,000 on first 0.1 M + 3% on next 0.4 M |
| 0.5 M | 1.0 M | 16,000 on first 0.5 M + 2.4% on next 0.5 M |
| 1.0 M | 2.0 M | 28,000 on first 1.0 M + 2.2% on next 1.0 M |
| 2.0 M | 4.0 M | 50,000 on first 2.0 M + 2.0% on next 2.0 M |
| 4.0 M | 6.0 M | 90,000 on first 4.0 M + 1.8% on next 2.0 M |
| 6.0 M | 10.0 M | 126,000 on first 6.0 M + 1.5% on next 4.0 M |
| Over 10.0 M | | 186,000 on first 10.0 M + 1.0% of balance |

This letter of credit shall remain in effect until 15 months after acceptance of the competed work by the Owner.
The format of the Letter of Credit is specified on the following page.

vii) If the Contractor indicates in writing he prefers such, in lieu of filing the irrevocable Letter of Credit, a holdback equal to the amount in part vi) will be made for the same 15 month period and the reduction in holdback in part v) will be from the 5% value to such value established.

LETTER OF CREDIT
REQUIRED FORM ON BANK LETTERHEAD

Letter of Credit No. _____ Amount $_____

Expiry Date _____

To: THE HOLLAND MARSH DRAINAGE SYSTEM
JOINT MUNICIPAL SERVICES BOARD
3541 Line 11, P.O. Box 160, Bradford, Ontario L3Z 2A8

We hereby authorize you to draw on the _____
Name of bank
for the account of _____
Name of contractor
up to an aggregate amount of _____
Amount as required by contract
($ . ), available on demand.

We hereby establish and give you an IRREVOCABLE LETTER OF CREDIT in your favour in the above amount, which may be drawn on by you at any time, upon written demand, which demand we shall honour without enquiring whether you have the right as between yourself and the said customer to make such demand, and without recognizing any claim of our said customer, or objection of the customer to payment of same.

It is understood that this letter of credit relates to those financial obligations set out in an Agreement between

_____
Contractor name
and the Holland Marsh Drainage System Joint Municipal Services Board referred to as

_____
contract name and number

DATED at _____, Ontario, this _____ day of _____, 2009.

COUNTERSIGNED BY:

_____ _____
(Name of Bank)
Per:_____

_____

**16. Liquidated Damages (GC8.02.09)**

There are no liquidated damages on this project.

# PART VI GENERAL CONDITIONS

# OPS GENERAL CONDITIONS OF CONTRACT

## Table of Contents

**SECTION GC 5.0 - MATERIAL**



**SECTION GC 6.0 - INSURANCE, PROTECTION AND DAMAGE**

**SECTION GC 7.0 - CONTRACTOR'S RESPONSIBILITIES AND CONTROL OF THE WORK**



**SECTION GC 8.0 - MEASUREMENT AND PAYMENT**

## SECTION GC 1.0 - INTERPRETATION

### GC 1.01 Captions

.01 The captions appearing in these General Conditions have been inserted as a matter of convenience and for ease of reference only and in no way define, limit, or enlarge the scope or meaning of the General Conditions or any provision hereof.

### GC 1.02 Abbreviations

.01 The abbreviations on the left below are commonly found in the Contract Documents and represent the organizations and phrases listed on the right:

| | | |
|---|---|---|
| "AASHTO" | - | American Association of State Highway Transportation Officials |
| “ACI” | - | American Concrete Institute |
| "ANSI" | - | American National Standards Institute |
| "ASTM" | - | American Society for Testing and Materials |
| "AWG" | - | American Wire Gauge |
| "AWWA" | - | American Water Works Association |
| “CCIL” | - | Canadian Council of Independent Laboratories |
| "CESA" | - | Canadian Engineering Standards Association |
| "CGSB" | - | Canadian General Standards Board |
| "CSA" | - | Canadian Standards Association |
| "CWB" | - | Canadian Welding Bureau |
| "GC" | - | General Conditions |
| “ISO” | - | International Organization for Standardization |
| "MOE" | - | Ontario Ministry of the Environment |
| "MTO" | - | Ontario Ministry of Transportation |
| "MUTCD" | - | Manual of Uniform Traffic Control Devices (Replaced by OTM) |
| "OPS" | - | Ontario Provincial Standard |
| "OPSD" | - | Ontario Provincial Standard Drawing |
| "OPSS" | - | Ontario Provincial Standard Specification |
| “OTM” | - | Ontario Traffic Manual |
| "PEO" | - | Professional Engineers Ontario |
| "SAE" | - | Society of Automotive Engineers |
| “SCC” | - | Standards Council of Canada |
| "SSPC" | - | Structural Steel Painting Council |
| "UL" | - | Underwriters Laboratories |
| "ULC" | - | Underwriters Laboratories Canada |

### GC 1.03 Gender and Singular References

.01 References to the masculine or singular throughout the Contract Documents shall be considered to include the feminine and the plural and vice versa, as the context requires.

### GC 1.04 Definitions

.01 For the purposes of this Contract the following definitions apply:

**Actual Measurement** means the field measurement of that quantity within the approved limits of the Work.

**Addendum** means an addition or change in the tender documents issued by the Owner prior to tender closing.

**Additional Work** means work not provided for in the Contract and not considered by the Contract Administrator to be essential to the satisfactory completion of the Contract within its intended scope.

**Agreement** means the agreement between the Owner and the Contractor for the performance of the Work that is included in the Contract Documents.

**Base** means a layer of material of specified type and thickness placed immediately below the pavement wearing surface layers, curb and gutter, or sidewalk.

**Business Day** means any Day except Saturdays, Sundays, and statutory holidays.

**Certificate of Subcontract Completion** means the certificate issued by the Contract Administrator in accordance with clause GC 8.02.03.02, Certification of Subcontract Completion.

**Certificate of Substantial Performance** means the certificate issued by the Contract Administrator at Substantial Performance.

**Change Directive** means any written instruction signed by the Owner, or by the Contract Administrator where so authorized, directing that a Change in the Work or Extra Work be performed.

**Change in the Work** means the deletion, extension, increase, decrease, or alteration of lines; grades; dimensions; quantities; methods; drawings; substantial changes in geotechnical, subsurface, surface, or other conditions; changes in the character of the Work to be done; or materials of the Work or part thereof, within the intended scope of the Contract.

**Change Order** means a written amendment to the Contract signed by the Contractor and the Owner, or the Contract Administrator where so authorized, covering contingencies, a Change in the Work, Extra Work, Additional Work, and changed subsurface conditions; and establishing the basis for payment and the time allowed for the adjustment of the Contract Time.

**Completion Certificate** means the certificate issued by the Contract Administrator at completion.

**Constructor** means, for the purposes of, and within the meaning of the *Occupational Health and Safety Act,* R.S.O. 1990, c.O.1, as amended and amendments thereto, the Contractor who executes the Contract.

**Contract** means the undertaking by the Owner and the Contractor to perform their respective duties, responsibilities, and obligations as prescribed in the Contract Documents.

**Contract Administrator** means the person, partnership, or corporation designated by the Owner to be the Owner's representative for the purposes of the Contract.

**Contract Documents** mean the executed Agreement between the Owner and the Contractor, Tender, General Conditions of Contract, Supplemental General Conditions of Contract, Standard Specifications, Special Provisions, Contract Drawings, addenda incorporated in a Contract Document before the execution of the Agreement, such other documents as may be listed in the Agreement, and subsequent amendments to the Contract Documents made pursuant to the provisions of the Agreement.

**Contract Drawings** or **Contract Plans** mean drawings or plans, any Geotechnical Report, any Subsurface Report, and any other reports and information provided by the Owner for the Work, and without limiting the generality thereof, may include soil profiles, foundation investigation reports, reinforcing steel schedules, aggregate sources lists, Quantity Sheets, and cross-sections.

**Contract Time** means the time stipulated in the Contract Documents for Substantial Performance of the Work, including any extension of Contract Time made pursuant to the Contract Documents.

**Contractor** means the person, partnership, or corporation undertaking the Work as identified in the Agreement.

**Controlling Operation** means any component of the Work that, if delayed, may delay the completion of the Work.

**Cost Plus** has the same meaning as "Time and Material."

**Cut-Off Date** means the date up to which payment shall be made for work performed.

**Daily Work Records** mean daily Records detailing the number and categories of workers and hours worked or on standby, types and quantities of Equipment and number of hours in use or on standby, and description and quantities of Material utilized.

**Day** means a calendar day.

**Drawings** or **Plans** mean any Contract Drawings or Contract Plans, or any Working Drawings or Working Plans, or any reproductions of drawings or plans pertaining to the Work.

**End Result Specification** means specifications that require the Contractor to be responsible for supplying a product or part of the Work. The Owner accepts or rejects the final product or applies a price adjustment that is commensurate with the degree of compliance with the specification.

**Equipment** means all machinery and equipment used for preparing, fabricating, conveying or erecting the Work and normally referred to as construction machinery and equipment.

**Estimate** means a calculation of the quantity or cost of the Work or part of it depending on the context.

**Extra Work** means work not provided for in the Contract as awarded but considered by the Contract Administrator to be essential to the satisfactory completion of the Contract within its intended scope, including unanticipated work required to comply with legislation and regulations that affect the Work.

**Final Acceptance Certificate** means the certificate issued by the Contract Administrator at Final Acceptance of the Work.

**Final Detailed Statement** means a complete evaluation prepared by the Contract Administrator showing the quantities, unit prices, and final dollar amounts of all items of work completed under the Contract, including variations in tender items and Extra Work, all as set out in the same general form as the monthly estimates.

**Force Account** has the same meaning as “Time and Material.”

**Geotechnical Report** means a report or other information identifying soil, rock, and ground water conditions in the area of any proposed Work.

**Grade** means the required elevation of that part of the Work.

**Hand Tools** means tools that are commonly called tools or implements of the trade and include small power tools.

**Highway** means a common and public highway any part of that is intended for or used by the general public for the passage of vehicles and includes the area between the lateral property lines thereof.

**Lot** means a specific quantity of material or a specific amount of construction normally from a single source and produced by the same process.

**Lump Sum Item** means a tender item indicating a portion of the Work for which payment will be made at a single tendered price. Payment is not based on a measured quantity, although a quantity may be given in the Contract Documents.

**Major Item** means any tender item that has a value, calculated on the basis of its actual or estimated tender quantity, whichever is the larger, multiplied by its tender unit price, which is equal or greater than the lesser of,

a) $100,000, or

b) 5% of the total tender value calculated on the basis of the total of all the estimated tender quantities and the tender unit prices.

**Material** means material, machinery, equipment and fixtures forming part of the Work.

**Owner** means the party to the Contract for whom the Work is being performed, as identified in the Agreement, and includes, with the same meaning and import, "Authority."

**Pavement** means a wearing course or courses placed on the Roadway and consisting of asphaltic concrete, hydraulic cement concrete, Portland cement concrete, or plant or road mixed mulch.

**Performance Bond** means the type of security furnished to the Owner to guarantee completion of the Work in accordance with the Contract and to the extent provided in the bond.

**Plan Quantity** means that quantity as computed from within the boundary lines of the Work as shown in the Contract Documents.

**Project** means the construction of the Work as contemplated by this Contract.

**Quantity Sheet** means a list of the quantities of Work to be done.

**Quarried Rock** means material removed from an open excavation made in a solid mass of rock that, prior to removal, was integral with the parent mass.

**Quarry** means a place where Aggregate has been or is being removed from an open excavation made in a solid mass of igneous, sedimentary, or metamorphic rock or any combination of these that, prior to removal, was integral with the parent areas.

**Rate of Interest** means the rate of interest as determined under the *Financial Administration Act* by the Minister of Finance of Ontario and issued by, and available from, the Owner.

**Records** mean any books, payrolls, accounts, or other information that relate to the Work or any Change in the Work or claims arising therefrom.

**Roadway** means that part of the Highway designed or intended for use by vehicular traffic and includes the Shoulders.

**Shoulder** means that portion of the Roadway between the edge of the travelled portion of the wearing surface and the top inside edge of the ditch or fill slope.

**Special Provisions** mean directions containing requirements specific to the Work.

**Standard Drawing or Standard Specification** means a standard practice required and stipulated by the Owner for performance of the Work.

**Subbase** means a layer of material of specified type and thickness between the Subgrade and the Base.

**Subcontractor** means a person, partnership or corporation undertaking the execution of a part of the Work by virtue of an agreement with the Contractor.

**Subgrade** means the earth or rock surface, whether in cut or fill, as prepared to support the pavement structure, consisting of Base, Subbase, and Pavement.

**Subsurface Report** means a report or other information identifying the location of Utilities, concealed and adjacent structures, and physical obstructions that fall within the influence of the Work.

**Superintendent** means the Contractor's authorized representative in responsible charge of the Work.

**Surety** means the person, partnership or corporation, other than the Contractor, licensed in Ontario to transact business under the *Insurance Act*, R.S.O. 1990, c.I.8, as amended, executing a bond provided by the Contractor.

**Tender** means an offer in writing from the Contractor, submitted in the format prescribed by the Owner, to complete the Work.

**Time and Material** means costs calculated according to clause GC 8.02.04, Payment on a Time and Material Basis. Where "Cost Plus" and "Force Account" are used they shall have the same meaning.

**Utility** means an aboveground or underground facility maintained by a municipality, public utility authority or regulated authority and includes services such as sanitary sewer, storm sewer, water, electric, gas, oil, steam, data transmission, telephone, and cable television.

**Warranty Period** means the period of 12 months from the date of Substantial Performance or such longer period as may be specified in the Contract Documents for certain Materials or some or all of the Work. Where a date of Substantial Performance is not established, the Warranty Period shall commence on the date of Completion.

**Work** means the total construction and related services required by the Contract Documents.

**Working Area** means all the lands and easements owned or acquired by the Owner for the construction of the Work.

**Working Day** means any Day,

a) except Saturdays, Sundays and statutory holidays;

b) except a Day as determined by the Contract Administrator, on which the Contractor is prevented by inclement weather or conditions resulting immediately therefrom, from proceeding with a Controlling Operation. For the purposes of this definition, this shall be a Day during which the Contractor cannot proceed with at least 60% of the normal labour and Equipment force effectively engaged on the Controlling Operation for at least 5 hours;

c) except a Day on which the Contractor is prevented from proceeding with a Controlling Operation, as determined by the Contract Administrator by reason of,

    i. any breach of the Contract by the Owner or if such prevention is due to the Owner, another contractor hired by the Owner, or an employee of any one of them, or by anyone else acting on behalf of the Owner.
    ii. non-delivery of Owner supplied Materials.
    iii. any cause beyond the reasonable control of the Contractor that can be substantiated by the Contractor to the satisfaction of the Contract Administrator.

**Working Drawings** or **Working Plans** means any Drawings or Plans prepared by the Contractor for the execution of the Work and may, without limiting the generality thereof, include formwork, falsework, and shoring plans; Roadway protection plans; shop drawings; shop plans; or erection diagrams.

**GC 1.05 Substantial Performance**

.01 The Work is substantially performed,

a) when the Work to be performed under the Contract or a substantial part thereof is ready for use or is being used for the purpose intended; and

b) when the Work to be performed under the Contract is capable of completion or, where there is a known defect, the cost of correction, is not more than

i. 3% of the first $500,000 of the Contract price,
ii. 2% of the next $500,000 of the Contract price, and
iii. 1% of the balance of the Contract price.

.02 For the purposes of this Contract, where the Work or a substantial part thereof is ready for use or is being used for the purposes intended and the remainder of the Work cannot be completed expeditiously for reasons beyond the control of the Contractor or, where the Owner and the Contractor agree not to complete the Work expeditiously, the price of the services or materials remaining to be supplied and required to complete the Work shall be deducted from the Contract price in determining Substantial Performance.

**GC 1.06 Completion**

.01 The Work shall be deemed to be completed and services or Materials shall be deemed to be last supplied to the Work when the price of completion, correction of a known defect, or last supply is not more than the lesser of,

a) 1% of the Contract price; or

b) $1,000.

**GC 1.07 Final Acceptance**

.01 Final Acceptance shall be deemed to occur when the Contract Administrator is satisfied that, to the best of the Contract Administrator's knowledge at that time, the Contractor has rectified all imperfect work and has discharged all of the Contractor's obligations under the Contract.

**GC 1.08 Interpretation of Certain Words**

.01 The words "acceptable," "approval," "authorized," "considered necessary," "directed," "required," "satisfactory," or words of like import, shall mean approval of, directed, required, considered necessary, or authorized by and acceptable or satisfactory to the Contract Administrator, unless the context clearly indicates otherwise.

## SECTION GC 2.0 - CONTRACT DOCUMENTS

### GC 2.01 Reliance on Contract Documents

.01 The Owner warrants that the information furnished in the Contract Documents can be relied upon with the following limitations or exceptions:

a) The location of all mainline underground Utilities that may affect the Work shall be shown to a tolerance of:

i. 1 m horizontal, and
ii. 0.3 m vertical

.02 The Owner does not warrant or make any representation with respect to:

a) interpretations of data or opinions expressed in any Subsurface Report available for the perusal of the Contractor, whether or not such report is included as part of the Contract Documents, and

b) other information specifically excluded from this warranty.

### GC 2.02 Order of Precedence

.01 In the event of any inconsistency or conflict in the contents of the following documents, such documents shall take precedence and govern in the following descending order:

a) Agreement

b) Addenda

c) Special Provisions

d) Contract Drawings

e) Standard Specifications

f) Standard Drawings

g) Instructions to Tenderers

h) Tender

i) Supplemental General Conditions

j) General Conditions

k) Working Drawings

Later dates shall govern within each of the above categories of documents.

.02 In the event of any conflict among or inconsistency in the information shown on Drawings, the following rules shall apply:

a) Dimensions shown in figures on a Drawing shall govern where they differ from dimensions scaled from the same drawing;

b) Drawings of larger scale shall govern over those of smaller scale;

c) Detailed Drawings shall govern over general Drawings; and

d) Drawings of a later date shall govern over those of an earlier date in the same series.

.03 In the event of any inconsistency or conflict in the contents of Standard Specifications the following descending order of precedence shall govern:

a) Owner's Standard Specifications

b) Ontario Provincial Standard Specifications

c) Other Standard Specifications, such as those produced by CSA, CGSB, ASTM, and ANSI and referenced in the Ontario Provincial Standard Specifications

.04 The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all.

## SECTION GC 3.0 - ADMINISTRATION OF THE CONTRACT

### GC 3.01 Contract Administrator's Authority

.01 The Contract Administrator shall be the Owner's representative during construction and until the issuance of the Completion Certificate or the issuance of the Final Acceptance Certificate, whichever is later. All instructions to the Contractor, including instructions from the Owner, shall be issued by the Contract Administrator. The Contract Administrator shall have the authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

.02 All claims, disputes and other matters in question relating to the performance and the quality of the Work or the interpretation of the Contract Documents shall be referred to the Contract Administrator in writing by the Contractor.

.03 The Contract Administrator may inspect the Work for its conformity with the Plans and Standard Specifications, and to record the necessary data to establish payment quantities under the schedule of tender quantities and unit prices or to make an assessment of the value of the work completed in the case of a lump sum price Contract.

.04 The Contract Administrator shall determine the amounts owing to the Contractor under the Contract and shall issue certificates for payment in such amounts as provided for in Section GC 8.0, Measurement and Payment.

.05 The Contract Administrator shall, with reasonable promptness, review and take appropriate action upon the Contractor's submissions such as shop drawings, product data, and samples in accordance with the Contract Documents.

.06 The Contract Administrator shall investigate all allegations of a Change in the Work made by the Contractor and issue appropriate instructions.

.07 The Contract Administrator shall prepare Change Directives and Change Orders for the Owner’s approval.

.08 Upon written application by the Contractor, the Contract Administrator and the Contractor shall jointly conduct an inspection of the Work to establish the date of Substantial Performance of the Work or the date of Completion of the Work or both.

.09 The Contract Administrator shall be, in the first instance, the interpreter of the Contract Documents and the judge of the performance thereunder by both parties to the Contract. Interpretations and decisions of the Contract Administrator shall be consistent with the intent of the Contract Documents and, in making these decisions, the Contract Administrator shall not show partiality to either party.

.10 The Contract Administrator shall have the authority to reject part of the Work or Material that does not conform to the Contract Documents.

.11 In the event that the Contract Administrator determines that any part of the Work performed by the Contractor is defective, whether the result of poor workmanship; the use of defective material; or damage through carelessness or other act or omission of the Contractor and whether or not incorporated in the Work; or otherwise fails to conform to the Contract Documents, then the Contractor shall if directed by the Contract Administrator promptly remove the Work and replace, make good, or re-execute the Work at no additional cost to the Owner.

.12 Any part of the Work destroyed or damaged by such removals, replacements, or re-executions shall be made good, promptly, at no additional cost to the Owner.

.13 If, in the opinion of the Contract Administrator, it is not expedient to correct defective work or work not performed in accordance with the Contract Documents, the Owner may deduct from monies otherwise due to the Contractor the difference in value between the work as performed and that called for by the Contract Documents, the amount that will be determined in the first instance by the Contract Administrator.

.14 Notwithstanding any inspections made by the Contract Administrator or the issuance of any certificates or the making of any payment by the Owner, the failure of the Contract Administrator to reject any defective work or Material shall not constitute acceptance of defective work or Material.

.15 The Contract Administrator shall have the authority to temporarily suspend the Work for such reasonable time as may be necessary:

a) to facilitate the checking of any portion of the Contractor's construction layout;

b) to facilitate the inspection of any portion of the Work; or

c) for the Contractor to remedy non-compliance in the case of such non-compliance with the provisions of the Contract by the Contractor.

The Contractor shall not be entitled to any compensation for suspension of the Work in these circumstances.

.16 The Owner has the right to terminate the Contract for wilful or persistent violation by the Contractor or its workers of the Occupational Health and Safety Act legislation and regulations, Workplace Safety and Insurance Board Act, and Regulation 309 of the Environmental Protection Act.

.17 If the Contract Administrator determines that any worker employed on the Work is incompetent, as defined by the Occupational Health and Safety Act, or is disorderly, then the Contract Administrator shall provide written notice to the Contractor and the Contractor shall immediately remove the worker from the Working Area. Such worker shall not return to the Working Area without the prior written consent of the Contract Administrator.

**GC 3.02 Working Drawings**

.01 The Contractor shall arrange for the preparation of clearly identified and dated Working Drawings as called for by the Contract Documents.

.02 The Contractor shall submit Working Drawings to the Contract Administrator with reasonable promptness and in orderly sequence so as to not cause delay in the Work. If either the Contractor or the Contract Administrator so requests, they shall jointly prepare a schedule fixing the dates for submission and return of Working Drawings. Working Drawings shall be submitted in printed form. At the time of submission the Contractor shall notify the Contract Administrator in writing of any deviations from the Contract requirements that exist in the Working Drawings.

.03 The Contract Administrator shall review and return Working Drawings in accordance with an agreed upon schedule, or otherwise, with reasonable promptness so as not to cause delay.

.04 The Contract Administrator's review shall be to check for conformity to the design concept and for general arrangement only and such review shall not relieve the Contractor of responsibility for errors or omissions in the Working Drawings or of responsibility for meeting all requirements of the Contract Documents, unless a deviation on the Working Drawings has been approved in writing by the Contract Administrator.

.05 The Contractor shall make any changes in Working Drawings that the Contract Administrator may require to make the Working Drawings consistent with the Contract Documents and resubmit, unless otherwise directed by the Contract Administrator. When resubmitting, the Contractor shall notify the Contract Administrator in writing of any revisions other than those requested by the Contract Administrator.

.06 Work related to the Working Drawings shall not proceed until the Working Drawings have been signed and dated by the Contract Administrator and marked with the words "Reviewed. Permission to construct granted."

.07 The Contractor shall keep one set of the reviewed Working Drawings, marked as above, at the site at all times.

**GC 3.03 Right of the Contract Administrator to Modify Methods and Equipment**

.01 The Contractor shall, when requested in writing, make alterations in the method, Equipment, or work force at any time the Contract Administrator considers the Contractor's actions to be unsafe, or damaging to either the Work or existing facilities or the environment.

.02 The Contractor shall, when requested in writing, alter the sequence of its operations on the Contract so as to avoid interference with work being performed by others.

.03 Notwithstanding the foregoing, the Contractor shall ensure that all necessary safety precautions and protection are maintained throughout the Work.

**GC 3.04 Emergency Situations**

.01 The Contract Administrator has the right to determine the existence of an emergency situation and, when such an emergency situation is deemed to exist, the Contract Administrator may instruct the Contractor to take action to remedy the situation. If the Contractor does not take timely action or, if the Contractor is not available, the Contract Administrator may direct others to remedy the situation.

.02 If the emergency situation was the fault of the Contractor, the remedial work shall be done at the Contractor's expense. If the emergency situation was not the fault of the Contractor, the Owner shall pay for the remedial work.

**GC 3.05 Layout**

.01 The Contract Administrator shall provide baseline and benchmark information for the general location, alignment, and elevation of the Work. The Owner shall be responsible only for the correctness of the information provided by the Contract Administrator.

**GC 3.06 Extension of Contract Time**

.01 An application for an extension of Contract Time shall be made in writing by the Contractor to the Contract Administrator as soon as the need for such extension becomes evident and at least 15 Days prior to the expiration of the Contract Time. The application for an extension of Contract Time shall enumerate the reasons, and state the length of extension required.

.02 Circumstances suitable for consideration of an extension of Contract Time include the following:

a) Delays, subsection GC 3.07.

b) Changes in the Work, clause GC 3.10.01.

c) Extra Work, clause GC 3.10.02.

d) Additional Work, clause GC 3.10.03.

.03 The Contract Administrator shall, in considering an application for an extension to the Contract Time, take into account whether the delays, Changes in the Work, Extra Work, or Additional Work involve a Controlling Operation.

.04 The Contract Time shall be extended for such additional time as may be recommended by the Contract Administrator and deemed fair and reasonable by the Owner.

.05 The terms and conditions of the Contract shall continue for such extension of Contract Time.

**GC 3.07 Delays**

.01 If the Contractor is delayed in the performance of the Work by,

a) war, blockades, and civil commotions, errors in the Contract Documents;

b) an act or omission of the Owner or Contract Administrator, or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the Contract Documents;

c) a stop work order issued by a court or public authority, provided that such order was not issued as the result of an act or omission of the Contractor or anyone employed or engaged by the Contractor directly or indirectly;

d) the Contract Administrator giving notice under subsection GC 7.10, Suspension of Work;

e) abnormal inclement weather; or

f) archaeological finds in accordance with subsection GC 3.15, Archaeological Finds,

then the Contractor shall be reimbursed by the Owner for reasonable costs incurred by the Contractor as the result of such delay, provided that in the case of an application for an extension of Contract Time due to abnormal inclement weather, the Contractor shall, with the Contractor's application, submit evidence from Environment Canada in support of such application. Extension of Contract Time may be granted in accordance with subsection GC 3.06, Extension of Contract Time.

.02 If the Work is delayed by labour disputes, strikes or lock-outs, including lock-outs decreed or recommended to its members by a recognized contractor's association, of which the Contractor is a member or to which the Contractor is otherwise bound, are beyond the Contractor's control, which then the Contract Time shall be extended in accordance with subsection GC 3.06, Extension of Contract Time. In no case shall the extension of Contract Time be less than the time lost as the result of the event causing the delay, unless a shorter extension is agreed to by the Contractor. The Contractor shall not be entitled to payment for costs incurred as the result of such delays unless such delays are the result of actions by the Owner.

.03 The Contractor shall not be entitled to payment for the cost of delays incurred as a result of a dispute between the Contractor and Owner. The Contractor shall execute the Work and may pursue resolution of the dispute in accordance with subsection GC 3.13, Claims, Negotiations, Mediations.

**GC 3.08 Assignment of Contract**

.01 The Contractor shall not assign the Contract, either in whole or in part, without the prior written consent of the Owner.

**GC 3.09 Subcontracting by the Contractor**

.01 The Contractor may subcontract any part of the Work, subject to these General Conditions and any limitations specified in the Contract Documents.

.02 The Contractor shall notify the Contract Administrator 10 Days prior to the start of construction, in writing, of the intention to subcontract. Such notification shall identify the part of the Work, and the Subcontractor with whom it is intended.

.03 The Contract Administrator shall, within 5 Days of receipt of such notification, accept or reject the intended Subcontractor. The rejection shall be in writing and shall include the reasons for the rejection.

.04 The Contractor shall not, without the written consent of the Owner, change a Subcontractor who has been engaged in accordance with this subsection.

.05 The Contractor shall preserve and protect the rights of the parties under the Contract with respect to that part of the Work to be performed under subcontract and shall,

a) enter into agreements with the intended Subcontractors to require them to perform their work in accordance with the Contract Documents; and

b) be as fully responsible to the Owner for acts and omissions of the Contractor's Subcontractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the Contractor.

.06 The Owner's consent to subcontracting by the Contractor shall not be construed to relieve the Contractor from any obligation under the Contract and shall not impose any liability upon the Owner. Nothing contained in the Contract Documents shall create a contractual relationship between a Subcontractor and the Owner.

**GC 3.10 Changes**

**GC 3.10.01 Changes in the Work**

.01 The Owner, or the Contract Administrator where so authorized, may, by order in writing, make a Change in the Work without invalidating the Contract. The Contractor shall not be required to proceed with a Change in the Work until in receipt of a Change Order or Change Directive. Upon the receipt of such Change Order or Change Directive the Contractor shall proceed with the Change in the Work.

.02 The Contractor may apply for an extension of Contract Time according to the terms of subsection GC 3.06, Extension of Contract Time.

.03 If the Change in the Work relates solely to quantities, payment for that part of the Work shall be made according to the conditions specified in clause GC 8.01.02, Variations in Tender Quantities. If the Change in the Work does not solely relate to quantities, then either the Owner or the Contractor may initiate negotiations upwards or downwards for the adjustment of the Contract price in respect of the Change in the Work pursuant to subsection GC 3.13, Claims, Negotiations, Mediation or payment may be made according to the conditions contained in clause GC 8.02.04, Payment on a Time and Material Basis.

**GC 3.10.02 Extra Work**

.01 The Owner, or Contract Administrator where so authorized, may instruct the Contractor to perform Extra Work without invalidating the Contract. The Contractor shall not be required to proceed with the Extra Work until in receipt of a Change Order or Change Directive. Upon receipt of such Change Order or Change Directive the Contractor shall proceed with the Extra Work.

.02 The Contractor may apply for an extension of Contract Time according to the terms of subsection GC 3.06, Extension of Contract Time.

.03 Either the Owner or Contractor may initiate negotiations upwards or downwards for the payment for the Extra Work pursuant to subsection GC 3.13, Claims, Negotiations, Mediation, or payment may be made according to the conditions contained in clause GC 8.02.04, Payment on a Time and Material Basis.

**GC 3.10.03 Additional Work**

.01 The Owner, or Contract Administrator where so authorized, may request the Contractor to perform Additional Work without invalidating the Contract. If the Contractor agrees to perform Additional Work, the Contractor shall proceed with such Additional Work upon receipt of a Change Order.

.02 The Contractor may apply for an extension of Contract Time according to the terms of subsection GC 3.06, Extension of Contract Time.

.03 Payment for the Additional Work may be negotiated pursuant to subsection GC 3.13, Claims, Negotiations, Mediation, or payment may be made according to the conditions contained in clause GC 8.02.04, Payment on a Time and Material Basis.

**GC 3.11 Notices**

.01 Any notice permitted or required to be given to the Contract Administrator or the Superintendent in respect of the Work shall be deemed to have been given to and received by the addressee on the date of delivery if delivered by hand, email, or by facsimile transmission and on the fifth Day after the date of mailing, if sent by mail.

.02 The Contractor and the Owner shall provide each other with the mail and email addresses; pager, cell phone, and telephone numbers; and facsimile terminal numbers for the Contract Administrator and the Superintendent at the commencement of the Work, and update as necessary.

.03 In the event of an emergency situation or other urgent matter the Contract Administrator or the Superintendent may give a verbal notice, provided that such notice is confirmed in writing within 2 Days.

.04 Any notice permitted or required to be given to the Owner or the Contractor shall be given in accordance with the notice provision of the Contract.

**GC 3.12 Use and Occupancy of the Work Prior to Substantial Performance**

.01 Where it is not contemplated elsewhere in the Contract Documents, the Owner may use or occupy the Work or any part thereof prior to Substantial Performance, provided that at least 30 Days written notice has been given to the Contractor.

.02 The use or occupancy of the Work or any part thereof by the Owner prior to Substantial Performance shall not constitute an acceptance of the Work or parts so occupied. In addition, the use or occupancy of the Work shall not relieve the Contractor or the Contractor's Surety from any liability that has arisen, or may arise, from the performance of the Work in accordance with the Contract

Documents. The Owner shall be responsible for any damage that occurs because of the Owner's use or occupancy. Such use or occupancy of any part of the Work by the Owner does not waive the Owner's right to charge the Contractor liquidated damages in accordance with the terms of the Contract.

**GC 3.13 Claims, Negotiations, Mediation**

**GC 3.13.01 Continuance of the Work**

.01 Unless the Contract has been terminated or completed, the Contractor shall in every case, after serving or receiving any notification of a claim or dispute, verbal or written, continue to proceed with the Work with due diligence and expedition. It is understood by the parties that such action shall not jeopardize any claim it may have.

**GC 3.13.02 Record Keeping**

.01 Immediately upon commencing work that may result in a claim, the Contractor shall keep Daily Work Records during the course of the Work, sufficient to substantiate the Contractor's claim, and the Contract Administrator shall keep Daily Work Records to be used in assessing the Contractor's claim, all in accordance with clause GC 8.02.07, Records.

.02 The Contractor and the Contract Administrator shall attempt to reconcile their respective Daily Work Records on a daily basis, to simplify review of the claim, when submitted. If the Contractor and the Contract Administrator fail to reconcile their respective Daily Work Records, then the Contractor shall submit its Daily Work Records as part of its claim, whereby the resolution of the dispute about the Daily Work Records shall not be resolved until there is a resolution of the claim.

.03 The keeping of Daily Work Records by the Contract Administrator or the reconciling of such Daily Work Records with those of the Contractor shall not be construed to be acceptance of the claim.

**GC 3.13.03 Claims Procedure**

.01 The Contractor shall give verbal notice of any situation that may lead to a claim for additional payment immediately upon becoming aware of the situation.

.02 The Contractor shall provide written notice in the standard form "Notice of Intent to Claim" within 7 Days of the commencement of any part of the Work that may be affected by the situation.

.03 The Contractor shall submit detailed claims as soon as reasonably possible and in any event no later than 30 Days after completion of the work affected by the situation. The detailed claim shall:

a) identify the item or items in respect of which the claim arises;

b) state the grounds, contractual or otherwise, upon which the claim is made; and

c) include the Records maintained by the Contractor supporting such claim.

In exceptional cases, the 30 Days may be increased to a maximum of 90 Days with approval in writing from the Contract Administrator.

.04 Within 30 Days of the receipt of the Contractor's detailed claim, the Contract Administrator may request the Contractor to submit any further and other particulars as the Contract Administrator considers necessary to assess the claim. The Contractor shall submit the requested information within 30 Days of receipt of such request.

.05 Within 90 Days of receipt of the detailed claim, the Contract Administrator shall advise the Contractor, in writing, of the Contract Administrator's opinion with regard to the validity of the claim.

**GC 3.13.04 Negotiations**

.01 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, open and timely disclosure of relevant facts, information, and documents to facilitate these negotiations.

.02 Should the Contractor disagree with the opinion given in paragraph GC 3.13.03.05, with respect to any part of the claim, the Contract Administrator shall enter into negotiations with the Contractor to resolve the matters in dispute. Where a negotiated settlement cannot be reached and it is agreed that payment cannot be made on a Time and Material basis in accordance with clause GC 8.02.04, Payment on a Time and Material Basis, the parties shall proceed in accordance with clause GC 3.13.05, Mediation, or subsection GC 3.14, Arbitration.

**GC 3.13.05 Mediation**

.01 If a claim is not resolved satisfactorily through the negotiation stage noted in clause GC 3.13.04, Negotiations, within a period of 30 Days following the opinion given in paragraph GC 3.13.03.05, and the Contractor wishes to pursue the issue further, the parties may, upon mutual agreement, utilize the services of an independent third party mediator.

.02 The mediator shall be mutually agreed upon by the Owner and Contractor.

.03 The mediator shall be knowledgeable regarding the area of the disputed issue. The mediator shall meet with the parties together or separately, as necessary, to review all aspects of the issue. In a final attempt to assist the parties in resolving the issue themselves prior to proceeding to arbitration the mediator shall provide, without prejudice, a non-binding recommendation for settlement.

.04 The review by the mediator shall be completed within 90 Days following the opinion given in paragraph GC 3.13.03.05.

.05 Each party is responsible for its own costs related to the use of the third party mediator process. The cost of the third party mediator shall be equally shared by the Owner and Contractor.

**GC 3.13.06 Payment**

.01 Payment of the claim shall be made no later than 30 Days after the date of resolution of the claim or dispute. Such payment shall be made according to the terms of Section GC 8.0, Measurement and Payment.

**GC 3.13.07 Rights of Both Parties**

.01 It is agreed that no action taken under subsection GC 3.13, Claims, Negotiations, Mediation, by either party shall be construed as a renunciation or waiver of any of the rights or recourse available to the parties, provided that the requirements set out in this subsection are fulfilled.

**GC 3.14 Arbitration**

**GC 3.14.01 Conditions of Arbitration**

.01 If a claim is not resolved satisfactorily through the negotiation stage noted in clause GC 3.13.04, Negotiations, or the mediation stage noted in clause GC 3.13.05, Mediation, either party may invoke the provisions of subsection GC 3.14, Arbitration, by giving written notice to the other party.

.02 Notification that arbitration shall be implemented to resolve the issue shall be communicated in writing as soon as possible and no later than 60 Days following the opinion given in paragraph GC 3.13.03.05. Where the use of a third party mediator was implemented, notification shall be within 120 Days of the opinion given in paragraph GC 3.13.03.05.

.03 The parties shall be bound by the decision of the arbitrator.

.04 The rules and procedures of the *Arbitration Act*, 1991, S.O. 1991, c.17, as amended, shall apply to any arbitration conducted hereunder except to the extent that they are modified by the express provisions of subsection GC 3.14, Arbitration.

**GC 3.14.02 Arbitration Procedure**

.01 The following provisions are to be included in the agreement to arbitrate and are subject only to such right of appeal as exist where the arbitrator has exceeded his or her jurisdiction or have otherwise disqualified him or herself:

a) All existing actions in respect of the matters under arbitration shall be stayed pending arbitration;

b) All outstanding claims and matters to be settled are to be set out in a schedule to the agreement. Only such claims and matters as are in the schedule shall be arbitrated; and

c) Before proceeding with the arbitration, the Contractor shall confirm that all matters in dispute are set out in the schedule.

**GC 3.14.03 Appointment of Arbitrator**

.01 The arbitrator shall be mutually agreed upon by the Owner and Contractor to adjudicate the dispute.

.02 Where the Owner and Contractor cannot agree on a sole arbitrator within 30 Days of the notification of arbitration noted in paragraph GC 3.14.01.02, the Owner and the Contractor shall each choose an appointee within 37 Days of the notice of arbitration.

.03 The appointees shall mutually agree upon an arbitrator to adjudicate the dispute within 15 Days after the last appointee was chosen or they shall refer the matter to the Arbitration and Mediation Institute of Ontario Inc., which may select an arbitrator to adjudicate the dispute within 7 Days of being requested to do so.

.04 The arbitrator shall not be interested financially in the Contract nor in either party's business and shall not be employed by either party.

.05 The arbitrator may appoint independent experts and any other persons to assist him or her.

.06 The arbitrator is not bound by the rules of evidence that govern the trial of cases in court but may hear and consider any evidence that the arbitrator considers relevant.

.07 The hearing shall commence within 90 Days of the appointment of the arbitrator.

**GC 3.14.04 Costs**

.01 The arbitrator's fee shall be equally shared by the Owner and the Contractor.

.02 The fees of any independent experts and any other persons appointed to assist the arbitrator shall be shared equally by the Owner and the Contractor.

.03 The arbitration hearing shall be held in a place mutually agreed upon by both parties or in the event the parties do not agree, a site shall be chosen by the arbitrator. The cost of obtaining appropriate facilities shall be shared equally by the Owner and the Contractor.

.04 The arbitrator may, in his or her discretion, award reasonable costs, related to the arbitration.

**GC 3.14.05 The Decision**

.01 The reasoned decision shall be made in writing within 90 Days of the conclusion of the hearing. An extension of time to make a decision may be granted with consent of both parties. Payment shall be made in accordance with clause GC 3.13.06, Payment.

**GC 3.15 Archaeological Finds**

.01 If the Contractor's operations expose any items that may indicate an archaeological find, such as building remains, hardware, accumulations of bones, pottery, or arrowheads, the Contractor shall immediately notify the Contract Administrator and suspend operations within the area identified by the Contract Administrator. Notification may be verbal provided that such notice is confirmed in writing within 2 Days. Work shall remain suspended within that area until otherwise directed by the Contract Administrator in writing, in accordance with subsection GC 7.10, Suspension of Work.

.02 Any delay in the completion of the Contract that is caused by such a suspension of Work shall be considered to be beyond the Contractor's control in accordance with paragraph GC 3.07.01.

.03 Any work directed or authorized in connection with an archaeological find shall be considered as Extra Work in accordance with clause GC 3.10.02, Extra Work.

.04 The Contractor shall take all reasonable action to minimize additional costs that may accrue as a result of any work stoppage.

## SECTION GC 4.0 - OWNER'S RESPONSIBILITIES AND RIGHTS

### GC 4.01 Working Area

.01 The Owner shall acquire all property rights that are deemed necessary by the Owner for the construction of the Work, including temporary working easements, and shall indicate the full extent of the Working Area on the Contract Drawings.

.02 The Geotechnical Report and Subsurface Report that may be provided by the Owner as part of the tender documents shall form part of the Contract Drawings.

### GC 4.02 Approvals and Permits

.01 The Owner shall pay for all plumbing and building permits.

.02 The Owner shall obtain and pay for all permits, licences, and certificates solely required for the design of the Work.

### GC 4.03 Management and Disposition of Materials

.01 The Owner shall identify in the Contract Documents the materials to be moved within or removed from the Working Area and any characteristics of those materials that necessitates special materials management and disposition.

.02 In accordance with regulations under the *Occupational Health and Safety Act*, R.S.O. 1990, c.O.1, as amended, the Owner advises that,

a) the designated substances silica, lead, and arsenic are generally present throughout the Working Area occurring naturally or as a result of vehicle emissions;

b) the designated substance asbestos may be present in cement products, asphalt, and conduits for Utilities;

c) the following hazardous materials are ordinarily present in construction activities: limestone, gypsum, marble, mica, and Portland cement; and

d) exposure to these substances may occur as a result of activities by the Contractor such as sweeping, grinding, crushing, drilling, blasting, cutting, and abrasive blasting.

.03 The Owner shall identify in the Contract Documents any designated substances or hazardous materials other than those identified above and their location in the Working Area.

.04 If the Owner or Contractor discovers or is advised of the presence of designated substances or hazardous materials that are in addition to those listed in paragraph GC 4.03.02, or not clearly identified in the Contract Documents according to paragraph GC 4.03.03, then verbal notice shall be provided to the other party immediately with written confirmation within 2 Days. The Contractor shall stop work in the area immediately and shall determine the necessary steps required to complete the work in accordance with applicable legislation and regulation.

.05 The Owner shall be responsible for any reasonable additional costs of removing, managing and disposing of any material not identified in the Contract Documents, or where conditions exist that could not have been reasonably foreseen at the time of tendering. All work under this paragraph shall be deemed to be Extra Work.

.06 Prior to commencement of the Work, the Owner shall provide to the Contractor a list of those products controlled under the Workplace Hazardous Materials Information System (WHMIS), that the Owner may supply or use on the Contract, together with copies of the Materials Safety Data Sheets for these products. All containers used in the application of products controlled under WHMIS shall be labelled. The Owner shall notify the Contractor in writing of changes to the list and provide relevant Material Safety Data Sheets.

**GC 4.04 Construction Affecting Railway Property**

.01 The Owner shall pay the costs of all flagging and other traffic control measures required and provided by the railway company unless such costs are solely a function of the Contractor's chosen method of completing the Work.

.02 Every precaution shall be taken by the Contractor to protect all railway property at track crossings; or otherwise, on which construction operations are to take place in accordance with the terms of this Contract.

.03 The Contractor shall be required to conduct the construction operations in such a manner as to avoid a possibility of damaging any railway property in the vicinity of the works. Every reasonable precaution shall be taken by the Contractor to ensure the safety of the workers, Subcontractors, and Equipment, as well as railway property throughout the duration of the Contract.

**GC 4.05 Default by the Contractor**

.01 If the Contractor fails to commence the Work within 14 Days of a formal order to commence work signed by the Contract Administrator or, upon commencement of the Work, should neglect to prosecute the Work properly or otherwise fails to comply with the requirements of the Contract and, if the Contract Administrator has given a written statement to the Owner and Contractor that sufficient cause exists to justify such action, the Owner may, without prejudice to any other right or remedy the Owner may have, notify the Contractor in writing that the Contractor is in default of the Contractor’s contractual obligations and instruct the Contractor to correct the default in the 5 Working Days immediately following the receipt of such notice.

.02 If the Contractor is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the Contractor’s insolvency or if a receiver is appointed because of the Contractor’s insolvency, the Owner may, without prejudice to any other right or remedy the Owner may have, by giving the Contractor or receiver or trustee in bankruptcy notice in writing, terminate the Contract.

**GC 4.06 Contractor's Right to Correct a Default**

.01 The Contractor shall have the right within the 5 full Working Days following the receipt of a notice of default to correct the default and provide the Owner with satisfactory proof that appropriate corrective measures have been taken.

.02 If the correction of the default cannot be completed within the 5 full Working Days following receipt of the notice, the Contractor shall not be in default if the Contractor,

a) commences the correction of the default within the 5 full Working Days following receipt of the notice;

b) provides the Owner with an acceptable schedule for the progress of such correction; and

c) completes the correction in accordance with such schedule.

**GC 4.07 Owner's Right to Correct Default**

.01 If the Contractor fails to correct the default within the time specified in subsection GC 4.06, Contractor's Right to Correct a Default, or subsequently agreed upon, the Owner, without prejudice to any other right or remedy the Owner may have, may correct such default and deduct the cost thereof, as certified by the Contract Administrator, from any payment then or thereafter due to the Contractor.

**GC 4.08 Termination of Contractor's Right to Continue the Work**

.01 Where the Contractor fails to correct a default within the time specified in subsection GC 4.06, Contractor's Right to Correct a Default, or subsequently agreed upon, the Owner, without prejudice to any other right or remedy the Owner may have, may terminate the Contractor's right to continue the Work in whole or in part by giving written notice to the Contractor.

.02 If the Owner terminates the Contractor's right to continue with the Work in whole or in part, the Owner shall be entitled to,

a) take possession of the Working Area or that portion of the Working Area devoted to that part of the Work terminated;

b) use the Equipment of the Contractor and any Material within the Working Area that is intended to be incorporated into the Work, the whole subject to the right of third parties;

c) withhold further payments to the Contractor with respect to the Work or the portion of the Work withdrawn from the Contractor until the Work or portion thereof withdrawn is completed;

d) charge the Contractor the additional cost over the Contract price of completing the Work or portion thereof withdrawn from the Contractor, as certified by the Contract Administrator and any additional compensation paid to the Contract administrator for such additional service arising from the correction of the default;

e) charge the Contractor a reasonable allowance, as determined by the Contract Administrator, to cover correction to the Work performed by the Contractor that may be required under subsection GC 7.16, Warranty;

f) charge the Contractor for any damages the Owner sustained as a result of the default; and

g) charge the Contractor the amount by which the cost of corrections to the Work under subsection GC 7.16, Warranty, exceeds the allowance provided for such corrections.

**GC 4.09 Final Payment to Contractor**

.01 If the Owner's cost to correct and complete the Work in whole or in part is less than the amount withheld from the Contractor under subsection GC 4.08, Termination of Contractor's Right to Continue the Work, the Owner shall pay the balance to the Contractor as soon as the final accounting for the Contract is complete.

**GC 4.10 Termination of the Contract**

.01 Where the Contractor is in default of the Contract the Owner may, without prejudice to any other right or remedy the Owner may have, terminate the Contract by giving written notice of termination to the Contractor, the Surety, and any trustee or receiver acting on behalf of the Contractor's estate or creditors.

.02 If the Owner elects to terminate the Contract, the Owner may provide the Contractor and the trustee or receiver with a complete accounting to the date of termination.

**GC 4.11 Continuation of Contractor's Obligations**

.01 The Contractor's obligation under the Contract as to quality, correction, and warranty of the Work performed prior to the time of termination of the Contract or termination of the Contractor's right to continue with the Work in whole or in part shall continue to be in force after such termination.

**GC 4.12 Use of Performance Bond**

.01 If the Contractor is in default of the Contract and the Contractor has provided a Performance Bond, the provisions of Section GC 4.0, Owner’s Responsibilities and Rights, shall be exercised in accordance with the conditions of the Performance Bond.

**GC 4.13 Payment Adjustment**

.01 If any situation should occur in the performance of the Work that would result in a Change in the Work, the Owner shall be entitled to an adjustment and those adjustments shall be managed in accordance with subsection GC 3.10.01, Changes in the Work.

## SECTION GC 5.0 - MATERIAL

### GC 5.01 Supply of Material

.01 All Material necessary for the proper completion of the Work, except that listed as being supplied by the Owner, shall be supplied by the Contractor. The Contract price for the appropriate tender items shall be deemed to include full compensation for the supply of such Material.

### GC 5.02 Quality of Material

.01 All Material supplied by the Contractor shall be new, unless otherwise specified in the Contract Documents.

.02 Material supplied by the Contractor shall conform to the requirements of the Contract.

.03 As specified in the Contract Documents or as requested by the Contract Administrator, the Contractor shall make available, for inspection or testing, a sample of any Material to be supplied by the Contractor.

.04 The Contractor shall obtain for the Contract Administrator the right to enter onto the premises of the Material manufacturer or supplier to carry out such inspection, sampling, and testing as specified in the Contract Documents or as requested by the Contract Administrator.

.05 The Contractor shall notify the Contract Administrator of the sources of supply sufficiently in advance of the Material shipping dates to enable the Contract Administrator to perform the required inspection, sampling, and testing.

.06 The Owner shall not be responsible for any delays to the Contractor's operations where the Contractor fails to give sufficient advance notice to the Contract Administrator to enable the Contract Administrator to carry out the required inspection, sampling, and testing before the scheduled shipping date.

.07 The Contractor shall not change the source of supply of any Material without the written authorization of the Contract Administrator.

.08 Material that is not specified shall be of a quality best suited to the purpose required, and the use of such Material shall be subject to the approval of the Contract Administrator.

.09 All Material inspection, sampling, and testing shall be carried out on random basis in accordance with the standard inspection or testing methods required for the Material. Any approval given by the Contract Administrator for the Materials to be used in the Work based upon the random method shall not relieve the Contractor from the responsibility of incorporating Material that conforms to the Contract Documents into the Work or properly performing the Contract and of any liability arising from the failure to properly perform as specified in the Contract Documents.

### GC 5.03 Rejected Material

.01 Rejected Material shall be removed from the Working Area expeditiously after the notification to that effect from the Contract Administrator. Where the Contractor fails to comply with such notice, the Contract Administrator may cause the rejected Material to be removed from the Working Area and disposed of, in what the Contract Administrator considers to be the most appropriate manner, and the Contractor shall pay the costs of disposal and the appropriate overhead charges.

**GC 5.04 Substitutions**

.01 Where the Contract Documents require the Contractor to supply a Material designated by a trade or other name, the Tender shall be based only upon supply of the Material so designated, that shall be regarded as the standard of quality required by the Contract Documents. After the acceptance of the Tender, the Contractor may apply to the Contract Administrator to substitute another Material identified by a different trade or other name for the Material designated as aforesaid. The application shall be in writing and shall state the price for the proposed substitute Material designated as aforesaid, and such other information as the Contract Administrator may require.

.02 Rulings on a proposed substitution shall not be made prior to the acceptance of the Tender. Substitutions shall not be made without the prior approval of the Contract Administrator. The approval or rejection of a proposed substitution shall be at the discretion of the Contract Administrator.

.03 If the proposed substitution is approved by the Contract Administrator, the Contractor shall be entitled to the first $1,000 of the aggregate saving in cost by reason of such substitution and to 50% of any additional saving in cost in excess of such $1,000. Each such approval shall be conveyed to the Contractor in writing or by issuance of a Certificate of Equality on the Owner's standard form of "Certification of Equality" and, if any adjustment to the Contract price is made by reason of such substitution, a Change Order shall be issued as well.

**GC 5.05 Owner Supplied Material**

**GC 5.05.01 Ordering of Excess Material**

.01 Where Material is supplied by the Owner and where this Material is ordered by the Contractor in excess of the amount specified to complete the Work, such excess Material shall become the property of the Contractor on completion of the Work and shall be charged to the Contractor at cost plus applicable overheads.

**GC 5.05.02 Care of Material**

.01 The Contractor shall, in advance of receipt of shipments of Material supplied by the Owner, provide adequate and proper storage facilities acceptable to the Contract Administrator, and on the receipt of such Material shall promptly place it in storage, except where it is to be incorporated forthwith into the Work.

.02 The Contractor shall be responsible for acceptance of Material supplied by the Owner, at the specified delivery point and for its safe handling and storage. If such Material is damaged while under the control of the Contractor, it shall be replaced or repaired by the Contractor at no expense to the Owner, and to the satisfaction of the Contract Administrator. If such Material is rejected by the Contract Administrator for reasons that are not the fault of the Contractor, it shall remain in the care and at the risk of the Contractor until its disposition has been determined by the Contract Administrator.

.03 Where Material supplied by the Owner arrives at the delivery point in a damaged condition or where there are discrepancies between the quantities received and the quantities shown on the bills of lading, the Contractor shall immediately report such damage or discrepancies to the Contract Administrator who shall arrange for an immediate inspection of the shipment and provide the Contractor with a written release from responsibility for such damage or deficiencies. Where damage or deficiencies are not so reported, it shall be assumed that the shipment arrived in good condition and order, and any damage or deficiencies reported thereafter shall be made good by the Contractor at no extra cost to the Owner.

.04 The full amount of Material supplied by the Owner in each shipment shall be accounted for by the Contractor and such Material shall be at the risk of the Contractor after taking delivery. Such Material shall not, except with the written permission of the Contract Administrator, be used by the Contractor for purposes other than the performance of the Work under the Contract.

.05 Empty reels, crates, containers, and other type of packaging from Material supplied by the Owner shall become the property of the Contractor when they are no longer required for their original purpose and shall be disposed of by the Contractor, unless otherwise specified in the Contract Documents.

.06 Immediately upon receipt of each shipment, the Contractor shall provide the Contract Administrator copies of bills of lading, or such other documentation the Contract Administrator may require to substantiate and reconcile the quantities of Material received.

.07 Where Material supplied by the Owner is ordered and stockpiled prior to the award of the Contract, the Contractor shall, at no extra cost to the Owner, immediately upon commencement of operations, check the Material, report any damage or deficiencies to the Contract Administrator and take charge of the Material at the stockpile site. Where damage or deficiencies are not so recorded by the Contractor, it shall be assumed that the stockpile was in good condition and order when the Contractor took charge of it, and any damage or deficiencies reported thereafter shall be made good by the Contractor at no extra cost to the Owner.

## SECTION GC 6.0 - INSURANCE, PROTECTION AND DAMAGE

### GC 6.01 Protection of Work, Persons and Property

.01 The Contractor, the Contractor's agents, and all workers employed by or under the control of the Contractor, including Subcontractors, shall protect the Work, persons, and property from damage or injury. The Contractor shall be responsible for all losses and damage that may arise as the result of the Contractor's operations under the Contract, unless indicated to the contrary below.

.02 The Contractor is responsible for the full cost of any necessary temporary protective work or works and the restoration of all damage where the Contractor damages the Work or property in the performance of the Contract. If the Contractor is not responsible for the damage that occurs to the Work or property, the Contractor shall restore such damage, and such work and payment shall be administered according to these General Conditions.

.03 The Contractor shall immediately inform the Contract Administrator of all damage and injuries that occur during the term of the Contract. The Contractor shall then investigate and report back to the Contract Administrator within 15 Days of occurrence of incident, or as soon as possible.

.04 The Contractor shall not be responsible for loss and damage that occurs as a result of,

a) war;

b) blockades and civil commotions;

c) errors in the Contract Documents; or

d) acts or omissions of the Owner, the Contract Administrator, their agents and employees, or others not under the control of the Contractor, but within the Working Area with the Owner's permission.

.05 The Contractor and the Contractor’s Surety shall not be released from any term or provision of any responsibility, obligation, or liability under the Contract or waive or impair any of the rights of the Owner, except by a release duly executed by the Owner.

### GC 6.02 Indemnification

.01 The Contractor shall indemnify and hold harmless the Owner and the Contract Administrator, their elected officials, agents, officers, and employees from and against all claims, demands, losses, expenses, costs, damages, actions, suits, or proceedings by third parties, hereinafter called "claims", directly or indirectly arising or alleged to arise out of the performance of or the failure to perform the Work, provided such claims are,

a) attributable to bodily injury, sickness, disease, or death or to damage to or destruction of tangible property;

b) caused by negligent acts or omissions of the Contractor or anyone for whose acts the Contractor may be liable; and

c) made in writing within a period of 6 years from the date of Substantial Performance of the Work as set out in the Certificate of Substantial Performance of the Work or, where so specified in the Contract Documents, from the date of certification of Final Acceptance.

.02 The Contractor shall indemnify and hold harmless the Owner from all and every claim for damages, royalties or fees for the infringement of any patented invention or copyright occasioned by the Contractor in connection with the Work performed or Material furnished by the Contractor under the Contract.

.03 The Owner expressly waives the right to indemnity for claims other than those stated in paragraphs GC 6.02.01 and GC 6.02.02.

.04 The Owner shall indemnify and hold harmless the Contractor, their elected officials, agents, officers, and employees from and against all claims, demands, losses, expenses, costs, damages, actions, suits, or proceedings arising out of the Contractor's performance of the Contract that are attributable to a lack of or defect in title or an alleged lack of or defect in title to the Working Area.

.05 The Contractor expressly waives the right to indemnity for claims other than those stated in paragraph GC 6.02.04.

## GC 6.03 Contractor's Insurance

### GC 6.03.01 General

.01 Without restricting the generality of subsection GC 6.02, Indemnification, the Contractor shall provide, maintain, and pay for the insurance coverages listed under clauses GC 6.03.02 and GC 6.03.03. Insurance coverage in clauses GC 6.03.04, GC 6.03.05, and GC 6.03.06 shall only apply when so specified in the Contract Documents.

.02 The Contractor shall provide the Contract Administrator with an original Certificate of Insurance for each type of insurance coverage that is required by the Contract Documents. The Contractor shall ensure that the Contract Administrator is, at all times in receipt of a valid Certificate of Insurance for each type of insurance coverage, in such amounts as specified in the Contract Documents. The Contractor will not be permitted to commence work until the Contract Administrator is in receipt of such proof of insurance. The Contract Administrator may withhold payments of monies due to the Contractor until the Contractor has provided the Contract Administrator with original valid Certificates of Insurance as required by the provisions of the Contract Documents.

### GC 6.03.02 General Liability Insurance

.01 General liability insurance shall be in the name of the Contractor, with the Owner and the Contract Administrator named as additional insureds, with limits of not less than five million dollars inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof, with a property damage deductible of not more than $5,000. The form of this insurance shall be the Insurance Bureau of Canada Form IBC 2100.

.02 Another form of insurance equal to or better than that required in IBC Form 2100 may be used, provided all the requirements listed in the Contract are included. Approval of this insurance shall be conditional upon the Contractor obtaining the services of an insurer licensed to underwrite insurance in the Province of Ontario and obtaining the insurer's certificate of equivalency to the required insurance.

.03 The Contractor shall maintain in force such policies of insurance specified by the Contract Documents at all times from the commencement of the Work until the end of any Warranty Period or as otherwise required by the Contract Documents.

.04 The Contractor shall submit annually to the Owner, proof of continuation of the completed operations coverage and, if the Contractor fails to do so, the limitation period for claiming indemnity described in paragraph GC 6.02.01 c), shall not be binding on the Owner.

.05 Should the Contractor decide not to employ Subcontractors for operations requiring the use of explosives for blasting, pile driving or caisson work, removal or weakening of support of property building or land, IBC Form 2100 as required shall include the appropriate endorsements.

.06 The policies shall be endorsed to provide the Owner with not less than 30 Days written notice in advance of cancellation, change or amendment restricting coverage.

.07 "Claims Made" insurance policies shall not be permitted.

**GC 6.03.03 Automobile Liability Insurance**

.01 Automobile liability insurance in respect of licensed vehicles shall have limits of not less than five million dollars inclusive per occurrence for bodily injury, death and damage to property, in the following forms endorsed to provide the Owner with not less than 30 Days written notice in advance of any cancellation, change, or amendment restricting coverage:

a) standard non-owned automobile policy including standard contractual liability endorsement, and

b) standard owner's form automobile policy providing third party liability and accident benefits insurance and covering licensed vehicles owned or operated by the Contractor.

**GC 6.03.04 Aircraft and Watercraft Liability Insurance**

**GC 6.03.04.01 Aircraft Liability Insurance**

.01 Aircraft liability insurance with respect to owned or non-owned aircraft used directly or indirectly in the performance of the Work, including use of additional premises, shall be subject to limits of not less than five million dollars inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof, and limits of not less than five million dollars for aircraft passenger hazard. Such insurance shall be in a form acceptable to the Owner. The policies shall be endorsed to provide the Owner with not less than 30 Days written notice in advance of cancellation, change, or amendment restricting coverage.

**6.03.04.02 Watercraft Liability Insurance**

.01 Watercraft liability insurance with respect to owned or non-owned watercraft used directly or indirectly in the performance of the Work, including use of additional premises, shall be subject to limits of not less than five million dollars inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof. Such insurance shall be in a form acceptable to the Owner. The policies shall be endorsed to provide the Owner with not less than 30 Days written notice in advance of cancellation, change, or amendment restricting coverage.

**GC 6.03.05 Property and Boiler Insurance**

**GC 6.03.05.01 Property Insurance**

.01 All risks property insurance shall be in the name of the Contractor, with the Owner and the Contract Administrator named as additional insureds, insuring not less than the sum of the amount of the Contract price and the full value, as may be stated in the Contract Documents, of Material that is specified to be provided by the Owner for incorporation into the Work, with a deductible not exceeding 1% of the amount insured at the site of the Work. This insurance shall be in a form acceptable to the Owner and shall be maintained continuously until 10 Days after the date of Final Acceptance of the Work, as set out in the Final Acceptance Certificate.

**GC 6.03.05.02 Boiler Insurance**

.01 Boiler insurance insuring the interests of the Contractor, the Owner and the Contract Administrator for not less than the replacement value of boilers and pressure vessels forming part of the Work, shall be in a form acceptable to the Owner. This insurance shall be maintained continuously from commencement of use or operation of the property insured until 10 Days after the date of Final Acceptance of the Work, as set out in the Final Acceptance Certificate.

**GC 6.03.05.03 Use and Occupancy of the Work Prior to Completion**

.01 Should the Owner wish to use or occupy part or all of the Work prior to Substantial Performance, the Owner shall give 30 Days written notice to the Contractor of the intended purpose and extent of such use or occupancy. Prior to such use or occupancy, the Contractor shall notify the Owner in writing of the additional premium cost, if any, to maintain property and boiler insurance, which shall be at the Owner's expense. If because of such use or occupancy the Contractor is unable to provide coverage, the Owner upon written notice from the Contractor and prior to such use or occupancy shall provide, maintain, and pay for property and boiler insurance insuring the full value of the Work, including coverage for such use or occupancy, and shall provide the Contractor with proof of such insurance. The Contractor shall refund to the Owner the unearned premiums applicable to the Contractor's policies upon termination of coverage.

.02 The policies shall provide that, in the event of a loss or damage, payment shall be made to the Owner and the Contractor as their respective interests may appear. The Contractor shall act on behalf of both the Owner and the Contractor for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the Contractor shall proceed to restore the Work. Loss or damage shall not affect the rights and obligations of either party under the Contract, except that the Contractor shall be entitled to such reasonable extension of Contract Time relative to the extent of the loss or damage as the Contract Administrator may decide in consultation with the Contractor.

**GC 6.03.05.04 Payment for Loss or Damage**

.01 The Contractor shall be entitled to receive from the Owner, in addition to the amount due under the Contract, the amount at which the Owner's interest in restoration of the Work has been appraised, such amount to be paid as the restoration of the Work proceeds, and in accordance with the requirements of Section GC 8.0, Measurement and Payment. In addition, the Contractor shall be entitled to receive from the payments made by the insurers the amount of the Contractor's interest in the restoration of the Work.

.02 The Contractor shall be responsible for deductible amounts under the policies, except where such amounts may be excluded from the Contractor's responsibility by the terms of this Contract.

.03 In the event of a loss or damage to the Work arising from the action or omission of the Owner or others, the Owner shall pay the Contractor the cost of restoring the Work as the restoration of the Work proceeds and in accordance with the requirements of Section GC 8.0, Measurement and Payment.

**GC 6.03.06 Contractor's Equipment Insurance**

.01 All risks Contractor's equipment insurance covering construction machinery and equipment used by the Contractor for the performance of the Work, including boiler insurance on temporary boilers and pressure vessels, shall be in a form acceptable to the Owner and shall not allow subrogation claims by the insurer against the Owner. The policies shall be endorsed to provide the Owner with not less than 30 Days written notice in advance of cancellation, change, or amendment restricting coverage. Subject to satisfactory proof of financial capability by the Contractor for self-insurance of the Contractor's Equipment, the Owner agrees to waive the equipment insurance requirement, and for the purpose of this Contract, the Contractor shall be deemed to be insured. This policy shall be amended to provide permission for the Contractor to grant prior releases with respect to damage to the Contractor's Equipment.

**GC 6.03.07 Insurance Requirements and Duration**

.01 Unless specified otherwise, the duration of each insurance policy shall be from the date of commencement of the Work until 10 Days after the date of Final Acceptance of the Work, as set out in the Final Acceptance Certificate.

.02 The Contractor shall provide the Owner, on a form acceptable to the Owner, proof of insurance prior to commencement of the Work and signed by an officer of the Contractor and either the underwriter or the broker.

.03 The Contractor shall, on request, promptly provide the Owner with a certified true copy of each insurance policy exclusive of information pertaining to premium or premium bases used by the insurer to determine the cost of the insurance. The certified true copy shall include a signature by an officer of the Contractor and, in addition, a signature by an officer of the insurer or the underwriter or the broker.

.04 Where a policy is renewed, the Contractor shall provide the Owner, on a form acceptable to the Owner, renewed proof of insurance immediately following completion of renewal.

.05 Unless specified otherwise, the Contractor shall be responsible for the payment of deductible amounts under the policies.

.06 If the Contractor fails to provide or maintain insurance as required in subsection GC 6.03, Contractor's Insurance, or elsewhere in the Contract Documents, then the Owner shall have the right to provide and maintain such insurance and give evidence thereof to the Contractor. The Owner's cost thereof shall be payable by the Contractor to the Owner on demand.

.07 If the Contractor fails to pay the cost of the insurance placed by the Owner within 30 Days of the date on which the Owner made a formal demand for reimbursement of such costs, the Owner may deduct the costs thereof from monies which are due or may become due to the Contractor.

**GC 6.04 Bonding**

.01 The Contractor shall provide the Owner with the surety bonds in the amount required by the tender documents.

.02 Such bonds shall be issued by a duly licensed surety company authorized to transact a business of suretyship in the Province of Ontario and shall be to the satisfaction of the Owner. The bonds shall be maintained in good standing until the fulfilment of the Contract.

## GC 6.05 Workplace Safety and Insurance Board

.01 The Contractor shall provide the Contract Administrator with a copy of a Certificate of Clearance indicating the Contractor's good standing with the Workplace Safety and Insurance Board, as follows:

a) Immediately prior to the Contract Administrator authorizing the Contractor to commence Work.

b) Prior to issue of the Certificate of Substantial Performance.

c) Prior to expiration of the Warranty Period.

d) At any other time when requested by the Contract Administrator.

## SECTION GC 7.0 - CONTRACTOR'S RESPONSIBILITIES AND CONTROL OF THE WORK

### GC 7.01 General

.01 The Contractor warrants that the site of the Work has been visited during the preparation of the Tender and the character of the Work and all local conditions that may affect the performance of the Work are known.

.02 The Contractor shall not commence the Work nor deliver anything to the Working Area until the Contractor has received a written order to commence the Work, signed by the Contract Administrator.

.03 The Contractor shall have complete control of the Work and shall effectively direct and supervise the Work so as to ensure conformity with the Contract Documents. The Contractor shall be responsible for construction means, methods, techniques, sequences, and procedures and for coordinating the various parts of the Work.

.04 The Contractor shall provide adequate labour, Equipment, and Material to ensure the completion of the Contract in accordance with the Contract Documents. The Work shall be performed as vigorously and as continuously as weather conditions or other interferences may permit.

.05 The Contractor shall have the sole responsibility for the design, erection, operation, maintenance, and removal of temporary structures and other temporary facilities and the design and execution of construction methods required in their use.

.06 Notwithstanding paragraph GC 7.01.05, where the Contract Documents include designs for temporary structures and other temporary facilities or specify a method of construction in whole or part, such facilities and methods shall be considered to be part of the design of the Work, and the Contractor shall not be held responsible for that part of the design or the specified method of construction. The Contractor shall, however, be responsible for the execution of such design or specified method of construction in the same manner that the Contractor is responsible for the execution of the Work.

.07 The Contractor shall execute the terms of the Contract in strict compliance with the requirements of the *Occupational Health and Safety Act*, R.S.O. 1990, c.O.1, as amended, (the "Act") and Ontario Regulation 213/91, as amended, (that regulates Construction Projects) and any other regulations as amended under the Act (the "Regulations") that may affect the performance of the Work, as the "Constructor" or "employer," as defined by the Act, as the case may be. The Contractor shall ensure that:

a) worker safety is given first priority in planning, pricing, and performing the Work;

b) its officers and supervisory employees have a working knowledge of the duties of a "Constructor" and "employer" as defined by the Act and the provisions of the Regulations applicable to the Work, and a personal commitment to comply with them;

c) a copy of the most current version of the Act and the Regulations are available at the Contractor's office within the Working Area, or, in the absence of an office, in the possession of the supervisor responsible for the performance of the Work;

d) workers employed to carry out the Work possess the knowledge, skills, and protective devices required by law or recommended for use by a recognized industry association to allow them to work in safety;

e) its supervisory employees carry out their duties in a diligent and responsible manner with due consideration for the health and safety of the workers; and

f) all Subcontractors and their workers are properly protected from injury while they are at the Work Area.

.08 The Contractor, when requested, shall provide the Owner with a copy of its health and safety policy and program at the pre-start meeting and shall respond promptly to requests from the Owner for confirmation that its methods and procedures for carrying out the Work comply with the Act and Regulations. The Contractor shall cooperate with representatives of the Owner and the inspectors appointed to enforce the Act and the Regulations in any investigations of worker health and safety in the performance of the Work. The Contractor shall indemnify and save the Owner harmless from any additional expense that the Owner may incur to have the Work performed as a result of the Contractor's failure to comply with the requirements of the Act and the Regulations.

.09 Prior to commencement of the Work, the Contractor shall provide to the Contract Administrator a list of those products controlled under the Workplace Hazardous Materials Information System or WHMIS, which the Contractor expects to use on the Contract. Related Materials Safety Data Sheets shall accompany the submission. All containers used in the application of products controlled under WHMIS shall be labelled. The Contractor shall notify the Contractor Administrator in writing of changes in the products to be used and provide relevant Material Safety Data Sheets.

.10 The Contractor shall have an authorized representative on the site while any Work is being performed, to supervise the Work and act for or on the Contractor's behalf. Prior to commencement of construction, the Contractor shall notify the Contract Administrator of the names; addresses; positions; and cell phone, pager, and telephone numbers of the Contractor's representatives who can be contacted at any time to deal with matters relating to the Contract, and update as necessary.

.11 The Contractor shall designate a person to be responsible for traffic control and work zone safety. The designated person shall be a competent worker who is qualified because of knowledge, training, and experience to perform the duties; is familiar with Book 7 of the Ontario Traffic Manual; and has knowledge of all potential or actual danger to workers and motorists. Prior to the commencement of construction, the Contractor shall notify the Contract Administrator of the name; address; position; cell phone, pager, and telephone numbers of the designated person, and update as necessary. The designated person may have other responsibilities, including other construction sites, and need not be present in the Working Area at all times.

.12 The Contractor shall, at no additional cost to the Owner, furnish all reasonable aid, facilities, and assistance required by the Contract Administrator for the proper inspection and examination of the Work or the taking of measurements for the purpose of payment.

.13 The Contractor shall prepare and update, as required, a construction schedule of operations, indicating the proposed methods of construction and sequence of work and the time the Contractor proposes to complete the various items of work within the time specified in the Contract Documents. The schedule shall be submitted to the Contract Administrator within 14 Days from the Contract award. If the Contractor’s schedule is materially affected by changes, the Contractor shall submit an updated construction schedule, if requested by the Contract Administrator, within 7 Days of the request. This updated schedule shall show how the Contractor proposes to perform the balance of the Work, so as to complete the Work within the time specified in the Contract Documents.

.14 Where the Contractor finds any error, inconsistency, or omission relating to the Contract, the Contractor shall promptly report it to the Contract Administrator and shall not proceed with the activity affected until receiving direction from the Contract Administrator.

.15 The Contractor shall promptly notify the Contract Administrator in writing if the subsurface conditions observed in the Working Area differ materially from those indicated in the Contract Documents.

.16 The Contractor shall arrange with the appropriate Utility authorities for the stake out of all underground Utilities and service connections that may be affected by the Work. The Contractor shall observe the location of the stake outs prior to commencing the Work and in the event that there is a discrepancy between the location of the stake outs and the locations shown on the Contract Documents, that may affect the Work, the Contractor shall immediately notify the Contract Administrator and the affected Utility companies, in order to resolve the discrepancy. The Contractor shall be responsible for any damage done to the underground Utilities and service connections by the Contractor's forces during construction if the stake out locations are within the tolerances given in paragraph GC 2.01.01 a).

**GC 7.02 Layout**

.01 Prior to commencement of construction, the Contract Administrator and the Contractor shall locate on site those property bars, baselines, and benchmarks that are necessary to delineate the Working Area and to lay out the Work, all as shown on the Contract Drawings.

.02 The Contractor shall be responsible for the preservation of all property bars while the Work is in progress, except those property bars that must be removed to facilitate the Work. Any other property bars disturbed, damaged, or removed by the Contractor's operations shall be replaced under the supervision of an Ontario Land Surveyor, at the Contractor's expense.

.03 At no extra cost to the Owner, the Contractor shall provide the Contract Administrator with such materials and devices as may be necessary to lay out the baseline and benchmarks, and as may be necessary for the inspection of the Work.

.04 The Contractor shall provide qualified personnel to lay out and establish all lines and grades necessary for construction. The Contractor shall notify the Contract Administrator of any layout work carried out, so that the same may be checked by the Contract Administrator.

.05 The Contractor shall install and maintain substantial alignment markers and secondary benchmarks as may be required for the proper execution of the Work. The Contractor shall supply one copy of all alignment and grade sheets to the Contract Administrator.

.06 The Contractor shall assume full responsibility for alignment, elevations, and dimensions of each and all parts of the Work, regardless of whether the Contractor's layout work has been checked by the Contract Administrator.

.07 All stakes, marks, and reference points shall be carefully preserved by the Contractor. In the case of their destruction or removal, such stakes, marks, and reference points shall be replaced at the Contractor’s expense.

.08 Benchmarks and survey monuments identified in the Contract Documents shall be protected by the Contractor. In the case of their destruction or removal, such benchmarks and survey monuments shall be replaced by the Owner at the Contractor’s expense.

**GC 7.03 Working Area**

.01 The Contractor's sheds, site offices, toilets, other temporary structures, and storage areas for Material and Equipment shall be grouped in a compact manner and maintained in a neat and orderly condition at all times.

.02 The Contractor shall confine the construction operations to the Working Area. Should the Contractor require more space than that shown on the Contract Drawings, the Contractor shall obtain such space at no additional cost to the Owner.

.03 The Contractor shall not enter upon or occupy any private property for any purpose, unless the Contractor has received prior written permission from the property owner.

**GC 7.04 Damage by Vehicles or Other Equipment**

.01 If at any time, in the opinion of the Contract Administrator, damage is being done or is likely to be done to any Roadway or any improvement thereon, outside the Working Area, by the Contractor's vehicles or other Equipment, whether licensed or unlicensed Equipment, the Contractor shall, on the direction of the Contract Administrator, and at no extra cost to the Owner, make changes or substitutions for such vehicles or Equipment, and shall alter loadings, or in some other manner, remove the cause of such damage to the satisfaction of the Contract Administrator.

**GC 7.05 Excess Loading of Motor Vehicles**

.01 Where a vehicle is hauling Material for use on the Work, in whole or in part; upon a Highway; and where motor vehicle registration is required for such vehicle, the Contractor shall not cause or permit such vehicle to be loaded beyond the legal limit specified in the *Highway Traffic Act*, R.S.O. 1990, c.H.8, as amended, whether such vehicle is registered in the name of the Contractor or otherwise, except where there are designated areas within the Working Area where overloading is permitted. The Contractor shall bear the onus of weighing disputed loads.

**GC 7.06 Condition of the Working Area**

.01 The Contractor shall maintain the Working Area in a tidy condition and free from the accumulation of debris and prevent dust nuisance, mud, and ponding water, other than that caused by the Owner or others.

**GC 7.07 Maintaining Roads and Detours**

.01 Unless otherwise specified in the Contract Documents, if an existing Roadway is affected by construction, it shall be kept open to both vehicular and pedestrian traffic.

.02 Subject to the approval of the Contract Administrator, the Contractor shall, at no additional cost to the Owner, be responsible for providing and maintaining for the duration of the Work an alternative route for both pedestrian and vehicular traffic through the Working Area in accordance with the OTM, whether along the existing Highway under construction or on a detour road beside or adjacent to the Highway under construction.

.03 Subject to the approval of the Contract Administrator, the Contractor may block traffic for short periods of time to facilitate construction of the Work in accordance with the OTM. Any temporary lane closures shall be kept to a minimum.

.04 The Contractor shall not be required to maintain a road through the Working Area until such time as the Contractor has commenced operations or during seasonal shut down or on any part of the Contract that has been accepted in accordance with these General Conditions. The Contractor shall not be required to apply de-icing chemicals or abrasives or carry out snowplowing.

.05 Where localized and separated sections of the Highway are affected by the Contractor's operations, the Contractor shall not be required to maintain intervening sections of the Highway until such times as these sections are located within the limits of the Highway affected by the Contractor's general operations under the Contract.

.06 Where the Contract Documents provide for or the Contract Administrator requires detours at specific locations, payment for the construction of the detours and, if required, for the subsequent removal of the detours, shall be made at the Contract prices appropriate to such work.

.07 Compensation for all labour, Equipment, and Materials to do this Work shall be at the Contract prices appropriate to the Work and, where there are no such prices, at negotiated prices. Notwithstanding the foregoing, the cost of blading required to maintain the surface of such roads and detours shall be deemed to be included in the prices bid for the various tender items and no additional payment shall be made.

.08 Where work under the Contract is discontinued for any extended period, including seasonal shutdown, the Contractor shall, when directed by the Contract Administrator, open and place the Roadway and detours in a passable, safe, and satisfactory condition for public travel.

.09 Where the Contractor constructs a detour that is not specifically provided for in the Contract Documents or required by the Contract Administrator, the construction of the detour and, if required, the subsequent removal shall be performed at the Contractor's expense. The detour shall be constructed and maintained to structural and geometric standards approved by the Contract Administrator. Removal and site restoration shall be performed as directed by the Contract Administrator.

.10 Where, with the prior written approval of the Contract Administrator, the Highway is closed and the traffic diverted entirely off the Highway to any other Highway, the Contractor shall, at no extra cost to the Owner, supply, erect, and maintain traffic control devices in accordance with the OTM.

.11 Compliance with the foregoing provisions shall in no way relieve the Contractor of obligations under subsection GC 6.01, Protection of Work, Persons, and Property, dealing with the Contractor's responsibility for damage claims, except for claims arising on sections of Highway within the Working Area that are being maintained by others.

**GC 7.08 Access to Properties Adjoining the Work and Interruption of Utility Services**

.01 The Contractor shall provide at all times and at no extra cost to the Owner,

a) adequate pedestrian and vehicular access; and

b) continuity of Utility services

to properties adjoining the Working Area.

.02 The Contractor shall provide at all times and at no extra cost to the Owner access to fire hydrants, water and gas valves, and all other Utilities located in the Working Area.

.03 Where any interruptions in the supply of Utility services are required and are authorized by the Contract Administrator, the Contractor shall give the affected property owners notice in accordance with subsection GC 7.12, Notices by the Contractor, and shall arrange such interruptions so as to create a minimum of interference to those affected.

**GC 7.09 Approvals and Permits**

.01 Except as specified in subsection GC 4.02, Approval and Permits, the Contractor shall obtain and pay for any permits, licences, and certificates, which at the date of tender closing, are required for the performance of the Work.

.02 The Contractor shall arrange for all necessary inspections required by the approvals and permits specified in paragraph GC 7.09.01.

**GC 7.10 Suspension of Work**

.01 The Contractor shall, upon written notice from the Contract Administrator, discontinue or delay any or all of the Work and work shall not be resumed until the Contract Administrator so directs in writing. Delays, in these circumstances, shall be administered according to subsection GC 3.07, Delays.

**GC 7.11 Contractor's Right to Stop the Work or Terminate the Contract**

.01 If the Owner is adjudged bankrupt or makes a general assignment for the benefit of creditors because of insolvency or if a receiver is appointed because of insolvency, the Contractor may, without prejudice to any other right or remedy the Contractor may have, by giving the Owner or receiver or trustee in bankruptcy written notice, terminate the Contract.

.02 If the Work is stopped or otherwise delayed for a period of 30 Days or more under an order of a court or other public authority and provided that such order was not issued as the result of an act or fault of the Contractor or of anyone directly employed or engaged by the Contractor, the Contractor may, without prejudice to any other right or remedy the Contractor may have, by giving the Owner written notice, terminate the Contract.

.03 The Contractor may notify the Owner in writing, with a copy to the Contract Administrator, that the Owner is in default of contractual obligations if,

a) the Contract Administrator fails to issue certificates in accordance with the provisions of Section GC 8.0, Measurement and Payment;

b) the Owner fails to pay the Contractor, within 30 Days of the due dates identified in clause GC 8.02.03, Certification and Payment, the amounts certified by the Contract Administrator or within 30 Days of an award by an arbitrator or court; or

c) the Owner violates the requirements of the Contract.

.04 The Contractor's written notice to the Owner shall advise that if the default is not corrected in the 7 Days immediately following receipt of the written notice, the Contractor may, without prejudice to any other right or remedy the Contractor may have, stop the Work or terminate the Contract.

.05 If the Contractor terminates the Contract under the conditions set out in subsection GC 7.11, the Contractor shall be entitled to be paid for all work performed according to the Contract Documents and for any losses or damage as the Contractor may sustain as a result of the termination of the Contract.

**GC 7.12 Notices by the Contractor**

.01 Before work is carried out that may affect the property or operations of any Ministry or agency of government or any person; company; partnership; or corporation, including a municipal corporation or any board or commission thereof, and in addition to such notices of the commencement of specified operations as are prescribed elsewhere in the Contract Documents, the Contractor shall give at least 48 hours advance written notice of the date of commencement of such work to the person, company, partnership, corporation, board, or commission so affected.

.02 In the case of damage to or interference with any Utilities, pole lines, pipe lines, conduits, farm tiles, or other public or privately owned works or property, the Contractor shall immediately notify the Owner, Contract Administrator, and the owner of the works of the location and details of such damage or interference.

## GC 7.13 Obstructions

.01 Except as otherwise noted in these General Conditions, the Contractor assumes all the risks and responsibilities arising out of any obstruction encountered in the performance of the Work and any traffic conditions, including traffic conditions on any Highway or road giving access to the Working Area caused by such obstructions, and the Contractor shall not make any claim against the Owner for any loss, damage, or expense occasioned thereby.

.02 Where the obstruction is an underground Utility or other man-made object, the Contractor shall not be required to assume the risks and responsibilities arising out of such obstruction, unless the location of the obstruction is shown on the Plans or described in the Contract Documents and the location so shown is within the tolerance specified in paragraph GC 2.01.01 a), or unless the presence and location of the obstruction has otherwise been made known to the Contractor or could have been determined by the visual site investigation made by the Contractor in accordance with these General Conditions.

.03 During the course of the Contract, it is the Contractor's responsibility to consult with Utility companies or other appropriate authorities for further information in regard to the exact location of these Utilities, to exercise the necessary care in construction operations, and to take such other precautions as are necessary to safeguard the Utilities from damage.

## GC 7.14 Limitations of Operations

.01 Except for such work as may be required by the Contract Administrator to maintain the Work in a safe and satisfactory condition, the Contractor shall not carry out operations under the Contract on Saturdays, Sundays, and Statutory Holidays without permission in writing from the Contract Administrator.

.02 The Contractor shall cooperate and coordinate the Work with other Contractors, Utility companies, and the Owner and they shall be allowed access to their work or plant at all reasonable times.

## GC 7.15 Cleaning Up Before Acceptance

.01 Upon attaining Substantial Performance of the Work, the Contractor shall remove surplus materials, tools, construction machinery and equipment not required for the performance of the remaining Work. The Contractor shall also remove all temporary works and debris other than that caused by the Owner or others and leave the Work and Working Area clean and suitable for occupancy by the Owner, unless otherwise specified.

.02 The Work shall not be deemed to have reached Completion until the Contractor has removed surplus materials, tools, construction machinery, and equipment. The Contractor shall also have removed debris, other than that caused by the Owner, or others.

## GC 7.16 Warranty

.01 Unless otherwise specified in the Contract Documents for certain Materials or components of the Work, the Contractor shall be responsible for the proper performance of the Work only to the extent that the design and standards permit such performance.

.02 Subject to the previous paragraph the Contractor shall correct promptly, at no additional cost to the Owner, defects or deficiencies in the Work that appear,

a) prior to and during the period of 12 months from the date of Substantial Performance of the Work, as set out in the Certificate of Substantial Performance of the Work,

b) where the work is completed after the date of Substantial Performance, 12 months after Completion of the Work,

c) where there is no Certificate of Substantial Performance, 12 months from the date of Completion of the Work as set out in the Completion Certificate, or

d) such longer periods as may be specified in the Contract Documents for certain Materials or some of the Work.

The Contract Administrator shall promptly give the Contractor written notice of observed defects or deficiencies.

.03 The Contractor shall correct or pay for damage resulting from corrections made under the requirements of paragraph GC 7.16.02.

**GC 7.17 Contractor's Workers**

.01 The Contractor shall only employ orderly, competent, and skillful workers to do the Work and whenever the Contract Administrator shall inform the Contractor in writing that any worker or workers involved in the Work are, in the opinion of the Contract Administrator, incompetent, or disorderly such worker or workers shall be removed from the work and shall not be employed on the work again without the consent in writing of the Contract Administrator.

**GC 7.18 Drainage**

.01 During construction and until the Work is completed, the Contractor shall make all reasonable efforts to keep all portions of the Work properly and efficiently drained, to at least the same degree as that of the existing drainage conditions.

## SECTION GC 8.0 - MEASUREMENT AND PAYMENT

### GC 8.01 Measurement

### GC 8.01.01 Quantities

.01 The Contract Administrator shall make an Estimate once a month, in writing, of the quantity of Work performed. The first Estimate shall be the quantity of Work performed since the Contractor commenced the Contract, and every subsequent Estimate, except the final one, shall be of the quantity of Work performed since the preceding Estimate was made. The Contract Administrator shall provide the copy of each Estimate to the Contractor within 10 Days of the Cut-Off Date.

.02 Such quantities for progress payments shall be construed and held to approximate. The final quantities for the issuance of the Completion Payment Certificate shall be based on the measurement of Work completed.

.03 Measurement of the quantities of the Work performed may be either by Actual Measurement or by Plan Quantity principles as indicated in the Contract. Adjustments to Plan Quantity measurements shall normally be made using Plan Quantity principles but may, where appropriate, be made using Actual Measurements. Those items identified on the Tender by the notation (P) in the unit column shall be paid according to the Plan Quantity. Items where the notation (P) does not occur shall be paid according to Actual Measurement or lump sum.

### GC 8.01.02 Variations in Tender Quantities

.01 Where it appears that the quantity of Work to be done or Material to be supplied or both by the Contractor under a unit price tender item may exceed or be less than the tender quantity, the Contractor shall proceed to do the Work or supply the Material or both required to complete the tender item and payment shall be made for the actual amount of Work done or Material supplied or both at the unit prices stated in the Tender except as provided below:

a) In the case of a Major Item where the quantity of Work performed or Material supplied or both by the Contractor exceeds the tender quantity by more than 15%, either party to the Contract may make a written request to the other party to negotiate a revised unit price for that portion of the Work performed or Material supplied or both which exceeds 115% of the tender quantity. The negotiation shall be carried out as soon as reasonably possible. Any revision of the unit price shall be based on the actual cost of doing the Work or supplying the Material or both under the tender item plus a reasonable allowance for profit and applicable overhead.

b) In the case of a Major Item where the quantity of Work performed or Material supplied or both by the Contractor is less than 85% of the tender quantity, the Contractor may make a written request to negotiate for the portion of the actual overheads and fixed costs applicable to the amount of the underrun in excess of 15% of the tender quantity. For purposes of the negotiation, the overheads and fixed costs applicable to the item are deemed to have been prorated uniformly over 100% of the tender quantity for the item. Overhead costs shall be confirmed by a statement certified by the Contractor's senior financial officer or auditor and may be audited by the Owner. Alternatively, where both parties agree, an allowance equal to 10% of the unit price on the amount of the underrun in excess of 15% of the tender quantity shall be paid.

Written requests for compensation must be received no later than 60 Days after the issuance of the Completion Payment Certificate.

**GC 8.02 Payment**

**GC 8.02.01 Price for Work**

.01 Prices for the Work shall be full compensation for all labour, Equipment and Material required in its performance. The term "all labour, Equipment, and Material" shall include Hand Tools, supplies, and other incidentals.

.02 Payment for work not specifically detailed as part of any one item and without specified details of payment shall be deemed to be included in the items with which it is associated.

**GC 8.02.02 Advance Payments for Material**

.01 The Owner shall make advance payments for Material intended for incorporation in the Work upon the written request of the Contractor and according to the following terms and conditions:

a) The Contractor shall deliver the Material to a site approved by the Contract Administrator and the Contractor shall, in advance of receipt of the shipment of the Material, arrange for adequate and proper storage facilities.

b) The value of aggregates, processed and stockpiled, shall be assessed by the following procedure:

i. Sources Other Than Commercial
   (1) Granular A, B, BI, BII, BIII, M, and O shall be assessed at the rate of 60% of the Contract price.
   (2) Coarse and fine aggregates for hot mix asphaltic concrete, surface treatment and Portland cement concrete shall be assessed at the rate of 25% of the Contract price for each aggregate stockpiled.

ii. Commercial Sources
   Payment for separated coarse and fine aggregates shall be considered at the above rate when such materials are stockpiled at a commercial source where further processing is to be carried out before incorporating such materials into a final product. Advance payments for other materials located at a commercial source shall not be made.

c) Payment for all other materials, unless otherwise specified elsewhere in the Contract Documents, shall be based on the invoice price, and the Contractor shall submit proof of cost to the Contract Administrator before payment can be made by the Owner.

d) The payment for all Materials shall be prorated against the appropriate tender item by paying for sufficient units of the item to cover the value of the material. Such payment shall not exceed 80% of the Contract price for the item.

e) All Materials for which the Contractor wishes to receive advance payment shall be placed in the designated storage location immediately upon receipt of the material and shall thenceforth be held by the Contractor in trust for the Owner as collateral security for any monies advanced by the Owner and for the due completion of the Work. The Contractor shall not exercise any act of ownership inconsistent with such security, or remove any Material from the storage locations, except for inclusion in the Work, without the consent, in writing, of the Contract Administrator.

f) Such materials shall remain at the risk of the Contractor who shall be responsible for any loss, damage, theft, improper use, or destruction of the material however caused.

.02 Where the Owner makes advance payments subject to the conditions listed in paragraph GC 8.02.02.01, such payment shall not constitute acceptance of the Material by the Owner. Acceptance shall only be determined when the material meets the requirements of the appropriate specification.

**GC 8.02.03 Certification and Payment**

**GC 8.02.03.01 Progress Payment Certificate**

.01 The value of the Work performed and Material supplied shall be calculated once a month by the Contract Administrator in accordance with the Contract Documents and clause GC 8.01.01, Quantities.

.02 The progress Payment Certificate shall show,

a) the quantities of Work performed;

b) the value of Work performed;

c) any advanced payment for Material;

d) the amount of statutory holdback, liens, Owner's set-off;

e) the amount of GST, as applicable; and

f) the amount due to the Contractor.

.03 One copy of the progress Payment Certificate shall be sent to the Contractor.

.04 Payment shall be made within 30 Days of the Cut-Off Date.

**GC 8.02.03.02 Certification of Subcontract Completion**

.01 Before the Work has reached the stage of Substantial Performance, the Contractor may notify the Contract Administrator, in writing that a subcontract is completed satisfactorily and ask that the Contract Administrator certify the completion of such subcontract.

.02 The Contract Administrator shall issue a Certificate of Subcontract Completion, if the subcontract has been completed satisfactorily, and all required inspection and testing of the works covered by the subcontract have been carried out and the results are satisfactory.

.03 The Contract Administrator shall set out in the Certificate of Subcontract Completion the date on which the subcontract was completed and, within 7 Days of the date the subcontract is certified complete, the Contract Administrator shall give a copy of the certificate to the Contractor and to the Subcontractor concerned.

**GC 8.02.03.03 Subcontract Statutory Holdback Release Certificate and Payment**

.01 Following receipt of the Certificate of Subcontract Completion, the Owner shall release and pay the Contractor the statutory holdback retained in respect of the subcontract. Such release shall be made 46 Days after the date the subcontract was certified complete and providing the Contractor submits the following to the Contract Administrator:

a) a document satisfactory to the Contract Administrator that shall release the Owner from all further claims relating to the subcontract, qualified by stated exceptions such as holdback monies;

b) evidence satisfactory to the Contract Administrator that the Subcontractor has discharged all liabilities incurred in carrying out the subcontract;

c) a satisfactory clearance certificate or letter from the Workplace Safety and Insurance Board relating to the subcontract; and

d) a copy of the contract between the Contractor and the Subcontractor and a satisfactory statement showing the total amount due the Subcontractor from the Contractor.

.02 Paragraph GC 8.02.03.03.01 d), shall only apply to Lump Sum Items and then only when the Contract Administrator specifically requests it.

.03 Upon receipt of the statutory holdback, the Contractor shall forthwith give the Subcontractor the payment due under the subcontract.

.04 Release of statutory holdback by the Owner in respect of a subcontract shall not relieve the Contractor, or the Contractor's Surety, of any of their responsibilities.

**GC 8.02.03.04 Certification of Substantial Performance**

.01 Upon application by the Contractor and when the Contract Administrator has verified that the Contract has been substantially performed, the Contract Administrator shall issue a Certificate of Substantial Performance.

.02 Upon verifying that the Contract has been substantially performed, the Contract Administrator shall issue a certificate of Substantial Performance and shall set out in the Certificate of Substantial Performance the date on which the Contract was substantially performed and, within 7 Days after signing the said certificate, the Contract Administrator shall provide a copy to the Contractor.

.03 Upon receipt of a copy of the Certificate of Substantial Performance, the Contractor shall forthwith, as required by Section 32(1) Paragraph 5 of the *Construction Lien Act*, R.S.O. 1990, c.C.30, as amended, publish a copy of the certificate in a construction trade newspaper. Such publication shall include placement in the Daily Commercial News.

.04 Where the Contractor fails to publish a copy of the Certificate of Substantial Performance as required above within 7 Days after receiving a copy of the certificate signed by the Contract Administrator, the Owner may publish a copy of the certificate at the Contractor's expense.

.05 Except as otherwise provided for in Section 31 of the *Construction Lien Act*, the 45 Day lien period prior to the release of holdback as referred to in clause GC 8.02.03.05, Substantial Performance Payment and Statutory Holdback Release Payment Certificates, shall commence from the date of publication of the Certificate of Substantial Performance as provided for above.

**GC 8.02.03.05 Substantial Performance Payment and Substantial Performance Statutory Holdback Release Payment Certificates**

.01 When the Contract Administrator issues the Certificate of Substantial Performance, the Contract Administrator shall also issue the Substantial Performance Payment Certificate and the Substantial Performance Statutory Holdback Release Payment Certificate or where appropriate, a combined payment certificate.

.02 The Substantial Performance Payment Certificate shall show,

a) the value of Work performed to the date of Substantial Performance;

b) the value of outstanding or incomplete Work;

c) the amount of the statutory holdback, allowing for any previous releases of statutory holdback to the Contractor in respect of completed subcontracts and deliveries of pre-selected equipment;

d) the amount of maintenance security required; and

e) the amount due the Contractor.

.03 Payment of the amount certified shall be made within 30 Days of the date of issuance of the payment certificate.

.04 The Substantial Performance Statutory Holdback Release Payment Certificate shall be a payment certificate releasing to the Contractor the statutory holdback due in respect of Work performed up to the date of Substantial Performance. Payment of such statutory holdback shall be due 46 Days after the date of publication of the Certificate of Substantial Performance but subject to the provisions of the *Construction Lien Act* and the submission by the Contractor of the following documents:

a) a release by the Contractor in a form satisfactory to the Contract Administrator releasing the Owner from all further claims relating to the Contract, qualified by stated exceptions such as outstanding work or matters arising out of subsection GC 3.13, Claims, Negotiations, Mediation;

b) a statutory declaration in a form satisfactory to the Contract Administrator that all liabilities incurred by the Contractor and the Contractor's Subcontractors in carrying out the Contract have been discharged except for statutory holdbacks properly retained;

c) a satisfactory Certificate of Clearance from the Workplace Safety and Insurance Board; and

d) proof of publication of the Certificate of Substantial Performance.

**GC 8.02.03.06 Certification of Completion**

.01 Upon application by the Contractor and when the Contract Administrator has verified that the Contract has reached Completion, the Contract Administrator shall issue a Completion Certificate.

.02 The Contract Administrator shall set out in the Completion Certificate the date on which the Work was completed and, within 7 Days of signing the said certificate, the Contract Administrator shall provide a copy to the Contractor.

**GC 8.02.03.07 Completion Payment and Completion Statutory Holdback Release Payment Certificates**

.01 When the Contract Administrator issues the Completion Certificate, the Contract Administrator shall also issue the Completion Payment Certificate and the Completion Statutory Holdback Release Payment Certificate or where appropriate, a combined payment certificate.

.02 The Completion Payment Certificate shall show,

a) measurement and value of Work at Completion;

b) the amount of the further statutory holdback based on the value of further work completed over and above the value of work completed shown in the Substantial Performance Payment Certificate referred to above; and

c) the amount due the Contractor.

.03 The Completion Statutory Holdback Release Payment Certificate shall be a payment certificate releasing to the Contractor the further statutory holdback. Payment of such statutory holdback shall be due 46 Days after the date of Completion of the Work as established by the Completion Certificate but subject to the provisions of the *Construction Lien Act* and the submission by the Contractor of the following documents:

a) a release by the Contractor in a form satisfactory to the Contract Administrator releasing the Owner from all further claims relating to the Contract, qualified by stated exceptions where appropriate;

b) a statutory declaration in a form satisfactory to the Contract Administrator that all liabilities incurred by the Contractor and the Contractor's Subcontractors in carrying out the Contract have been discharged, qualified by stated exceptions where appropriate; and

c) a satisfactory Certificate of Clearance from the Workplace Safety and Insurance Board.

**GC 8.02.03.08 Interest**

.01 Interest due the Contractor is based on simple interest and is calculated using the applicable Rate of Interest.

**GC 8.02.03.09 Interest for Late Payment**

.01 Provided the Contractor has complied with the requirements of the Contract, including all documentation requirements, when payment by the Owner to the Contractor for Work performed, or for release of statutory holdback, is delayed by the Owner, then the Contractor shall be entitled to receive interest on the outstanding payment at the Rate of Interest, if payment is not received on the dates set out below:

a) Progress Payment Certificates: 30 Days after the Cut-Off Date;

b) Certificate of Subcontract Completion: 30 Days after the date certified as the date on which the subcontract was completed;

c) Subcontract Statutory Holdback Release Payment Certificate: 76 Days after the date on which the subcontract was completed;

d) Substantial Performance Payment Certificate: 30 Days after the date of issuance of the certificate;

e) Substantial Performance Statutory Holdback Release Payment Certificate: 76 Days after publication of the Payment Certificate of Substantial Performance;

f) Completion Payment Certificate: 30 Days after the date certified as the date on which the Contract reached Completion; and

g) Completion Statutory Holdback Release Payment Certificate: 76 Days after the date certified as the date that the Work was completed.

.02 If the Contractor has not complied with the requirements of the Contract, including all documentation requirements, prior to expiration of the time periods described in paragraph GC 8.02.03.09.01, interest shall only begin to accrue when the Contractor has completed those requirements.

**GC 8.02.03.10 Interest for Negotiations and Claims**

.01 Except as hereinafter provided, where a notice of negotiation, notice of intent to claim and the subsequent claims are submitted in accordance with the time limits or procedure or both described by subsection GC 3.13, Claims, Negotiations, Mediation, the Owner shall pay the Contractor the Rate of Interest on the amount of the negotiated price for that part of the Work or on the amount of the settled claim. Such interest shall not commence until 30 Days after the satisfactory completion of that part of the Work.

.02 Where the Contractor does not attempt to resolve the negotiation or the claim in an expeditious manner, interest shall be negotiable.

.03 Where the Contractor fails to give notice of a claim within the time limit prescribed by subsection GC 3.13, Claims, Negotiations, Mediation, interest shall not be paid.

.04 Where a Contractor fails to comply with the 30 Day time limit and the procedures prescribed in paragraph GC 3.13.03.03 for submission of claims, interest shall not be paid for the delay period.

**GC 8.02.03.11 Owner's Set-Off**

.01 Pursuant to Section 12 of the *Construction Lien Act*, the Owner may retain from monies owing to the Contractor under this Contract an amount sufficient to cover any outstanding or disputed liabilities, including the cost to remedy deficiencies, the reduction in value of substandard portions of the Work, claims for damages by third parties that have not been determined in writing by the Contractor's insurer, undetermined claims by the Owner under paragraph GC 8.01.02.01 a), any assessment due the Workplace Safety and Insurance Board, and any monies to be paid to the workers in accordance with clause GC 8.02.06, Payment of Workers.

.02 Under these circumstances the Owner will give the Contractor appropriate notice of such action.

**GC 8.02.03.12 Delay in Payment**

.01 The Owner shall not be deemed to be in default of the Contract provided any delay in payment does not exceed 30 Days from the due dates as defined in paragraph GC 8.02.03.09.01.

**GC 8.02.04 Payment on a Time and Material Basis**

**GC 8.02.04.01 Definitions**

.01 For the purpose of clause GC 8.02.04 the following definitions apply:

**Cost of Labour** means the amount of wages, salary, travel, travel time, food, lodging, or similar items and Payroll Burden paid or incurred directly by the Contractor to or in respect of labour and supervision actively and necessarily engaged on the Work based on the recorded time and hourly rates of pay for such labour and supervision but shall not include any payment or costs incurred for general supervision, administration, and management time spent on the entire Work or any wages, salary, or Payroll Burden for which the Contractor is compensated by any payment made by the Owner for Equipment.

**Cost of Material** means the cost of Material purchased or supplied from stock and valued at current market prices for the purpose of carrying out Extra Work by the Contractor or by others, when such arrangements have been made by the Contractor for completing the Work, as shown by itemized invoices.

**Operated Rented Equipment** means Rented Equipment for which an operator is provided by the supplier of the equipment and for which the rent or lease includes the cost of the operator.

**Payroll Burden** means the payments in respect of workplace insurance, vacation pay, employment insurance, public liability and property damage insurance, sickness and accident insurance, pension fund, and such other welfare and benefit payments forming part of the Contractor's normal labour costs.

**Rented Equipment** means equipment that is rented or leased for the special purpose of Work on a Time and Material Basis from a person, firm, or corporation that is not an associate of the lessee as the word "associate" is defined by the *Securities Act*, R.S.O. 1990, c.S.5, as amended, and is approved by the Contract Administrator.

**Road Work** means the preparation, construction, finishing, and construction maintenance of roads, streets, Highways, and parking lots and includes all work incidentals thereto other than work on structures.

**Sewer and Watermain Work** means the preparation, construction, finishing, and construction maintenance of sewer systems and watermain systems, and includes all work incidental thereto other than work on structures.

**Standby Time** means any period of time that is not considered Working Time and which together with the Working Time does not exceed 10 hours in any one Working Day and during which time a unit of equipment cannot practically be used on other work but must remain on the site in order to continue with its assigned task and during which time the unit is in fully operable condition.

**Structure Work** means the construction, reconstruction, repair, alteration, remodelling, renovation, or demolition of any bridge, building, tunnel, or retaining wall and includes the preparation for and the laying of the foundation of any bridge, building, tunnel, or retaining wall and the installation of equipment and appurtenances incidental thereto.

**The 127 Rate** means the rate for a unit of Equipment as listed in OPSS 127, Schedule of Rental Rates for Construction Equipment, Including Model and Specification Reference, that is current at the time the work is carried out or for Equipment that is not so listed, the rate that has been calculated by the Owner, using the same principles as used in determining The 127 Rates.

**Work on a Time and Material Basis** means Changes in the Work, Extra Work, and Additional Work approved by the Contract Administrator for payment on a Time and Material basis. The Work on a Time and Material Basis shall be subject to all the terms, conditions, Standard Specifications and provisions of the Contract.

**Working Time** means each period of time during which a unit of Equipment is actively and of necessity engaged on a specific operation and the first 2 hours of each immediately following period during which the unit is not so engaged but during which the operation is otherwise proceeding and during which time the unit cannot practically be transferred to other work but must remain on the site in order to continue with its assigned tasks and during which time the unit is in a fully operable condition.

**GC 8.02.04.02 Daily Work Records**

.01 Daily Work Records, prepared as the case may be by either the Contractor's representative or the Contract Administrator reporting the labour and Equipment employed and the Material used on each Time and Material project, should be reconciled and signed each Day by both the Contractor's representative and the Contract Administrator. If it is not possible to reconcile the Daily Work Records, then the Contractor shall submit the un-reconciled Daily Work Records with its claim, whereby the resolution of the dispute about the Daily Work Records shall not be resolved until there is a resolution of the claim.

**GC 8.02.04.03 Payment for Work**

.01 Payment as herein provided shall be full compensation for all labour, Equipment, and Material to do the Work on a Time and Material Basis except where there is agreement to the contrary prior to the commencement of the Work on a Time and Material Basis. The payment adjustments on a Time and Material basis shall apply to each individual Change Order authorized by the Contract Administrator.

**GC 8.02.04.04 Payment for Labour**

.01 The Owner shall pay the Contractor for labour employed on each Time and Material project at 135% of the Cost of Labour up to $3,000, then at 120% of any portion of the Cost of Labour in excess of $3,000.

.02 The Owner shall make payment in respect of Payroll Burden for Work on a Time and Material Basis at the Contractor's actual cost of Payroll Burden.

.03 At the Owner's discretion, an audit may be conducted in which case the actual Payroll Burden so determined shall be applied to all Time and Material work on the Contract.

**GC 8.02.04.05 Payment for Material**

.01 The Owner shall pay the Contractor for Material used on each Time and Material project at 120% of the Cost of the Material up to $3,000, then at 115% of any portion of the Cost of Material in excess of $3,000.

**GC 8.02.04.06 Payment for Equipment**

**GC 8.02.04.06.01 Working Time**

.01 The Owner shall pay the Contractor for the Working Time of all Equipment, other than Rented Equipment and Operated Rented Equipment, used on the Work on a Time and Material basis at The 127 Rates with a cost adjustment as follows:

a) Cost $10,000 or less - no adjustment;

b) Cost greater than $10,000 but not exceeding $20,000 - payment $10,000 plus 90% of the portion in excess of $10,000; and

c) Cost greater than $ 20,000 - $19,000 plus 80% of the portion in excess of $20,000.

.02 The Owner shall pay the Contractor for the Working Time of Rented Equipment used on the Work on a Time and Material Basis at 110% of the invoice price approved by the Contract Administrator up to a maximum of 110% of The 127 Rate. This constraint shall be waived when the Contract Administrator approves the invoice price prior to the use of the Rented Equipment.

.03 The Owner shall pay the Contractor for the Working Time of Operated Rented Equipment used on the Work on a Time and Material Basis at 110% of the Operated Rented Equipment invoice price approved by the Contract Administrator prior to the use of the Equipment on the Work on a Time and Material Basis.

**GC 8.02.04.06.02 Standby Time**

.01 The Owner shall pay the Contractor for Standby Time of Equipment at 35% of The 127 Rate or 35% of the invoice price whichever is appropriate. The Owner shall pay reasonable costs for Rented Equipment where this is necessarily retained in the Working Area for extended periods agreed to by

the Contract Administrator. This shall include Rented Equipment intended for use on other work, but has been idled due to the circumstances giving rise to the Work on a Time and Material Basis.

.02 In addition, the Owner shall include the Cost of Labour of operators or associated labourers who cannot be otherwise employed during the standby period or during the period of idleness caused by the circumstances giving rise to the Work on a Time and Material Basis.

.03 The Contract Administrator may require Rented Equipment idled by the circumstances giving rise to the Work on Time and Material Basis to be returned to the lessor until the work requiring the equipment can be resumed. The Owner shall pay such costs as a result from such return.

.04 When Equipment is transported, solely for the purpose of the Work on a Time and Material Basis, to or from the Working Area on a Time and Material basis, payment shall be made by the Owner only in respect of the transporting units. When Equipment is moved under its own power it shall be deemed to be working. The method of moving Equipment and the rates shall be subject to the approval of the Contract Administrator.

**GC 8.02.04.07 Payment for Hand Tools**

.01 Notwithstanding any other provision of this Section, no payment shall be made to the Contractor for or in respect of Hand Tools or equipment that are tools of the trade.

**GC 8.02.04.08 Payment for Work By Subcontractors**

.01 Where the Contractor arranges for Work on a Time and Material Basis, or a part of it, to be performed by Subcontractors on a Time and Material basis and has received approval prior to the commencement of such work, in accordance with the requirements of subsection GC 3.09, Subcontracting by the Contractor, the Owner shall pay the cost of Work on a Time and Material Basis by the Subcontractor calculated as if the Contractor had done the Work on a Time and Material Basis, plus a markup calculated on the following basis:

a) 20% of the first $3,000; plus

b) 15% of the amount from $3,000 to $10,000; plus

c) 5% of the amount in excess of $10,000.

.02 No further markup shall be applied regardless of the extent to which the work is assigned or sublet to others. If work is assigned or sublet to an associate, as defined by the *Securities Act*, no markup whatsoever shall be applied.

**GC 8.02.04.09 Submission of Invoices**

.01 At the start of the Work on a Time and Material Basis, the Contractor shall provide the applicable labour and Equipment rates not already submitted to the Contract Administrator during the course of such work.

.02 Separate summaries shall be completed by the Contractor according to the standard form "Summary for Payment of Accounts on a Time and Material Basis." Each summary shall include the Change Directive or Change Order number and covering dates of the work and shall itemize separately the labour, Materials, and Equipment. Invoices for Materials, Rented Equipment, and other charges incurred by the Contractor on the Work on a Time and Material Basis shall be included with each summary.

.03 Each month the Contract Administrator shall include with the monthly progress payment certificate, the costs of the Work on a Time and Material Basis incurred during the preceding month all in accordance with the contract administrative procedures and the Contractor's invoice of the Work on a Time and Material Basis.

.04 The final "Summary for Payment of Accounts on a Time and Material Basis" shall be submitted by the Contractor within 60 Days after the completion of the Work on a Time and Material Basis.

**GC 8.02.04.10 Payment Other Than on a Time and Material Basis**

.01 Clause GC 8.02.04 does not preclude the option of the Contract Administrator and the Contractor negotiating a Lump Sum Item or unit price payment for Change in the Work, Extra Work, and Additional Work.

**GC 8.02.04.11 Payment Inclusions**

.01 Except where there is agreement in writing to the contrary, the compensation, as herein provided, shall be accepted by the Contractor as compensation in full for profit and all costs and expenses arising out of the work, including all cost of general supervision, administration, and management time spent on the work, and no other payment or allowance shall be made in respect of such work.

**GC 8.02.05 Final Acceptance Certificate**

.01 After the acceptance of the Work, the Contract Administrator shall issue the Final Acceptance Certificate, or, where applicable, after the Warranty Period has expired. The Final Acceptance Certificate shall not be issued until all known deficiencies have been adjusted or corrected, as the case may be, and the Contractor has discharged all obligations under the Contract.

**GC 8.02.06 Payment of Workers**

.01 The Contractor shall, in addition to any fringe benefits, pay the workers employed on the Work in accordance with the labour conditions set out in the Contract and at intervals of not less than twice a month.

.02 The Contractor shall require each Subcontractor doing any part of the Work to pay the workers employed by the Subcontractor on the Work in accordance with paragraph GC 8.02.06.01.

.03 Where any person employed by the Contractor or any Subcontractor or other person on the Work is paid less than the amount required to be paid under the Contract, the Owner may set off monies in accordance with clause GC 8.02.03.11, Owner's Set-Off.

**GC 8.02.07 Records**

.01 The Contractor shall maintain and keep accurate Records relating to the Work, Changes in the Work, Extra Work, and claims arising therefrom. Such Records shall be of sufficient detail to support the total cost of the Work, Changes in the Work, and Extra Work. The Contractor shall preserve all such original Records until 12 months after the Final Acceptance Certificate is issued or until all claims have been settled, whichever is longer. The Contractor shall require that Subcontractors employed by the Contractor preserve all original Records pertaining to the Work, Changes in the Work, Extra Work, and claims arising therefrom for a similar period of time.

.02 The Owner may inspect and audit the Contractor's Records relating to the Work, Extra Work, and Changes in the Work at any time during the period of the Contract. The Contractor shall supply certified copies of any part of its Records required, whenever requested by the Owner.

**GC 8.02.08 Taxes**

.01 Where a change in Canadian Federal or Provincial taxes occurs after the date of tender closing for this Contract, and this change could not have been anticipated at the time of bidding, the Owner shall increase or decrease Contract payments to account for the exact amount of tax change involved.

.02 Claims for compensation for additional tax cost shall be submitted by the Contractor to the Contract Administrator on forms provided by the Contract Administrator to the Contractor. Such claims for additional tax costs shall be submitted not less than 30 Days after the date of Final Acceptance.

.03 Where the Contractor benefits from a change in Canadian Federal or Provincial taxes, the Contractor shall submit to the Contract Administrator, on forms provided by the Contract Administrator, a statement of such benefits. This statement shall be submitted not later than 30 Days after Final Acceptance.

.04 Changes in Canadian Federal or Provincial taxes that impact upon commodities, which when left in place form part of the finished Work, or the provision of services, where such services form part of the Work and where the manufacture or supply of such commodities or the provision of such services is carried out by the Contractor or a Subcontractor, are subject to a claim or benefit as detailed above. Services in the latter context means the supply and operation of equipment, the provision of labour, and the supply of commodities that do not form part of the Work.

**GC 8.02.09 Liquidated Damages**

.01 When liquidated damages are specified in the Contract and the Contractor fails to complete the Work in accordance with the Contract, the Contractor shall pay such amounts as are specified in the Contract Documents.