

SPECIFICATIONS FOR **TEMPORARY WORKS**

1.0 DESCRIPTION

The Work shall consist of:

- .1 Design, supply, fabrication, installation, maintenance and removal of temporary works, including, but not limited to: access roads, site work roads, work bridges, work platforms, rock berms, cofferdams, shoring and formwork/falsework for cast-in-place concrete;
- .2 Mobilization and demobilization of equipment and material required for the Work; and
- .3 Site restoration.

2.0 REFERENCES AND RELATED SPECIFICATIONS

All reference standards and related specifications shall be current issue or latest revision at the date of tender advertisement.

2.1 Related Specifications

- Specifications for Structural Excavation
- Specifications for Supplying and Placing Granular Backfill
- Specifications for Reinforced Cast-In-Place Concrete
- Specifications for Superstructure Concrete

3.0 SUBMITTALS

The Contractor shall submit the following to the Engineer, in accordance with the Special Provisions:

- .1 Detailed design notes and Shop Drawings for temporary works (access roads, site work roads, work bridges, work platforms, rock berms, cofferdams, shoring and formwork/falsework for cast-in-place concrete) that are stamped, signed and dated by a Professional Engineer registered or licensed to practice in the Province of Manitoba. Specific temporary works requiring Shop Drawings will be identified in the Special Provisions. The design shall be in accordance with the requirements of this Specification and the requirements shown on the Drawings.
- .2 Proof that the above noted temporary works have been constructed in accordance with the Professional Engineer's Shop Drawings and specifications. This proof shall be in the form of a letter bearing the seal of the Professional Engineer certifying the temporary works are in accordance with his/her design and that he/she has carried out a personal inspection of the temporary works.
- .3 Proposed supplier(s) and location of quarry(ies) for supply of rockfill material for access roads, site work roads and rock berms.

4.0 MATERIALS

The Contractor shall be responsible for the supply, safe storage, and handling of all materials associated with this Work.

5.0 CONSTRUCTION METHODS

5.1 General

Temporary works, as described above, shall be designed to support all anticipated loads. The temporary works shall be designed and constructed such that the Work can be properly constructed as required by the Specifications, Drawings and Special Provisions. Sufficient clearances shall be provided by the temporary works to permit all required construction activities to proceed unhindered.

The Contractor shall construct the temporary works in accordance with the Shop Drawings. Variations in the construction will not be permitted, unless such variations are accepted by the Professional Engineer and the Engineer is provided with revised Shop Drawings.

Care shall be taken not to damage any portion of the permanent Work. Damage to the permanent Work during installation or removal of the temporary works shall be repaired by the Contractor at his own cost to the satisfaction of the Engineer.

Temporary works shall be in accordance with the environmental and regulatory requirements and to the satisfaction of the Engineer.

5.2 Access Roads and Site Work Roads

Access roads and site work roads shall be located as shown on the Drawings to minimize disturbance of vegetation. If access roads and site work roads are not shown on the Drawings, the Contractor shall submit proposed locations as part of the Site Plan submission.

Provincial Trunk Highways, Provincial Roads and Rural Municipal Roads shall not be used as site work roads. These roads can be used as Haul Roads in accordance with the General Conditions.

The Contractor shall not disturb the channel and embankment slopes beyond the limits shown on the Drawings unless he has obtained written permission from the Engineer. Such written permission shall be granted only if it can be shown conclusively that there is no alternative to cutting of the banks or slopes beyond the limits shown on the Drawings. If permission is granted, the Contractor shall be responsible for restoring the banks and slopes to the profile and compaction shown on the Drawings or as directed by the Engineer at his own expense.

Temporary stockpiling of the material required to construct access roads and site work roads may be permitted, subject to the approval of the Engineer. The locations and dimensions of all stockpiles shall not be detrimental to the sustainability of any existing watercourse channel or the stability of the banks. Any erosion and sedimentation control devices (e.g. silt fence) deemed necessary by the Engineer to protect the temporary stockpile area shall be supplied, installed, maintained and removed at the Contractor's expense.

The Contractor is responsible for all snow removal within the limits of the Work. Temporary stockpiling of cleared snow may be permitted at locations and to dimensions acceptable to the Engineer. All procedures for temporary stockpiling of snow shall consider the requirements for temporary sediment and erosion control measures, sight lines for the travelling public and channel/embankment slope stability, if applicable.

The Contractor shall return all access roads and site work roads to pre-construction condition upon or before completion of the Work to the satisfaction of the Engineer.

5.3 Work Bridges, Work Platforms and Rock Berms

The Contractor shall be responsible for maintaining the uninterrupted flow of water through the site for the duration of the Contract, unless otherwise allowed by environmental regulatory approvals.

The use of creosoted timbers in contact within the watercourse channels will not be permitted.

Temporary stockpiling of the material required to construct the rock berms may be permitted, subject to the approval of the Engineer. The material shall be stockpiled in locations and to dimensions acceptable to the Engineer.

5.4 Cofferdams for Water Control

Cofferdams shall be provided at the upstream and downstream limits of the site to allow excavation in the watercourse under dry conditions. Cofferdams shall be constructed with granular materials or sheetpiling and be as watertight as is necessary for the proper performance of the work that must be done inside them. The cofferdams shall be designed and constructed to meet the requirements of the Contractor's Water Control Plan, particularly with respect to maintaining stream flow through or around the site.

Cofferdams shall be constructed to the elevations shown on the Drawings or identified in the Special Provisions and shall provide sufficient clearances for:

- (a) Construction and inspection of forms and their subsequent removal;
- (b) Installation and driving of piles; and
- (c) Construction of cut-off trenches and sump pits to permit the pumping of water outside of forms, all without exceeding the excavation limits as shown on the Drawings.

Sheetpiling shall be driven to a depth below the bottom of the excavation to preclude the possibility of a blow-up from the bottom of the excavation.

Cofferdams shall not be removed until construction of the culvert and backfilling operations have been completed to an extent where unimpeded stream flow can be re-established. Backfill required around the permanent Work shall be supplied and placed in accordance with the Specifications for Supplying and Placing Granular Backfill.

5.5 Cofferdams for River Pier Construction

Sheetpiling cofferdams shall be provided for all river pier excavations within the watercourse and in excess of 1.5 metres in depth.

Sheetpiling cofferdams shall be as water tight as is necessary for the proper performance of the work that must be done inside them. Sheetpiling cofferdams shall be designed and constructed to the elevations shown on the Drawings or identified in the Special Provisions. Sheetpiling shall be driven to a depth below the bottom of the excavation to preclude the possibility of a blow-up from the bottom of the excavation to preclude the possibility of a blow-up from the bottom of the excavation.

The Contractor shall design and install shoring prior to commencing excavation. The shoring shall be installed in such a manner as to not disturb or damage any adjacent structures, railways or roadways. Sheetpiling cofferdams shall be designed and constructed to provide sufficient clearances for:

- (a) Construction and inspection of forms and their subsequent removal;
- (b) Installation and driving of piles; and
- (c) Installation, monitoring and removal of thermocouples for measuring thermal gradients in mass concrete components.

Pumping from the interior of the cofferdam shall be done in such a way as to preclude the possibility of the flow of water through any fresh concrete. Pumping will not be permitted during the placing of concrete or for a period of 24 hours after, unless the pumping is done from a suitable sump separated from the concrete by a watertight wall or other effective means.

Under extreme conditions where the ingress of water from the bottom of the excavation is impossible to stop, a seal of tremie concrete may be permitted. The Contractor shall use this tremie seal only on written order of the Engineer. If the Engineer determines that a tremie seal is required, the additional work shall be done and will be paid for as Extra Work in accordance with the General Conditions. This tremie concrete seal shall be placed below the excavation of the elevation of the bottom of the footing to such dimensions as may be necessary. Once the tremie concrete has reached the required strength to withstand the hydraulic head, the cofferdam shall be pumped out and the structural concrete shall be placed in the dry. During the placing of the tremie concrete seal, the elevation of the water inside the cofferdam shall be controlled to prevent any flow through the freshly placed concrete.

The Contractor shall insulate the walls of shoring and sheetpiling cofferdams constructed during the winter, when it is not possible to seal off water leaks that may develop from thawing due to introduction of heat.

Unless otherwise provided for, sheetpiling cofferdams and associated shoring, including sheeting and bracing, shall be removed after the completion of the structural concrete for the affected components of the substructure units. Care shall be taken not to disturb or otherwise damage the finished concrete or foundation material of the permanent Work or adjacent structures, railways or roadways. Backfill required around the permanent Work, with the exception of rip rap protection, shall be placed prior to removal of the sheetpiling cofferdams and shoring, and shall be supplied and placed in accordance with the Specifications for Supplying and Placing Granular Backfill.

5.6 Shoring

Shoring shall be provided as required to support existing structures, roadways or railways, as well as unstable slopes within the limits of the work site. Structural shoring requirements for supporting existing structures will be shown on the Drawings and identified in the Special Provisions. Excavation shoring requirements shall be in accordance with the Specifications for Structural Excavation.

Shoring shall be designed by a Professional Engineer registered or licensed to practice in the Province of Manitoba. The design shall be in accordance with the requirements of this Specification and the requirements shown on the Drawings. Detailed design notes and Shop Drawings shall be submitted in accordance with this Specification for review and comment by the Engineer.

Struts, bracing and other material not shown on the Shop Drawings shall not extend into the bridge foundations without written permission from the Engineer. The bracing system of the shored excavation or sheetpiling cofferdam shall not be removed in part or in whole until the shoring or sheetpiling cofferdam has been fully braced in an alternate manner, the excavation is backfilled, or the shoring or sheetpiling cofferdam is otherwise ready to be removed.

5.7 Formwork/Falsework for Cast-In-Place Concrete

Formwork/falsework for cast-in-place concrete shall meet the requirements specified in the Specifications for Reinforced Cast-in-Place Concrete and the Specifications for Superstructure Concrete.

6.0 QUALITY MANAGEMENT

The Contractor shall inspect temporary works on a daily basis to ensure that they are safe and have not been damaged due to construction, environmental exposure or vandalism.

Any damage or deficiencies in temporary works that could be perceived as unsafe or that may result in imminent danger shall be corrected immediately.

7.0 METHOD OF MEASUREMENT

7.1 Access Roads and Site Work Roads

The design, supply, installation, maintenance and removal of access roads and site work roads will be paid for on a Lump Sum Basis, and no separate measurement will be made for this work.

7.2 Work Bridges, Work Platforms and Rock Berms

The design, supply, fabrication, installation, maintenance and removal of work bridges, work platforms and rock berms will be paid for on a Lump Sum Basis, and no separate measurement will be made for this work.

7.3 Mobilization and Demobilization

Mobilization and demobilization will be paid for on a Lump Sum Basis, and no separate measurement will be made of this work.

7.4 Cofferdams

The design, supply, fabrication, installation, maintenance and removal of cofferdams will be paid for on a Lump Sum Basis, and no separate measurement will be made for this work.

7.5 Shoring

The design, supply, fabrication, installation, maintenance and removal of shoring systems will be paid for on a Lump Sum Basis and no separate measurement will be made for this work.

7.6 Formwork/Falsework for Cast-in-Place Concrete

The design, supply, fabrication, installation, maintenance and removal of the formwork/falsework for cast-in-place concrete will be considered incidental to the Work and no separate measurement will be made for this work.

7.7 Site Restoration

Site restoration will be considered incidental to the Work and no separate measurement will be made for this work.

8.0 BASIS OF PAYMENT

8.1 Access Roads and Site Work Roads

The design, supply, installation, maintenance and removal of all access roads and site work roads will be paid for at the Contract Lump Sum Price for "Access Roads and Site Work Roads", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.

8.2 Work Bridges, Working Platforms and Rock Berms

The design, supply, fabrication, installation, maintenance and removal of work bridges, work platforms and rock berms will be paid for at the Contract Lump Sum Price for "Work Bridges, Work Platforms and Rock Berms", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.

8.3 Mobilization and Demobilization

Mobilization and demobilization will be paid for at the Contract Lump Sum Price for "Mobilization of Equipment", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.

Two-thirds of the Lump Sum Price will be paid when the Engineer is satisfied that the majority of the required equipment is mobilized on the project. The remaining one-third of the Lump Sum Price will be paid when the work has been substantially completed to the satisfaction of the Engineer.

8.4 Cofferdams

The design, supply, fabrication, installation, maintenance and removal of cofferdams will be paid for at the Contract Lump Sum Price "Cofferdam Construction", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.

8.5 Shoring

The design, supply, fabrication, installation, maintenance and removal of shoring systems will be paid for at the Contract Lump Sum Price "Shoring", measured as specified herein, which price will be payment in full for performing all operations herein described and all other items incidental to the Work.