B517 - DEWATERING AND TEMPORARY FLOW PASSAGE SYSTEMS - OPSS 517

517.1 GENERAL

Dewatering is the work of removing groundwater and/or carrying out unwatering from within an excavation or work area to permit construction work as specified in the Contract Documents.

Temporary flow passage is the work of channelizing, separating and / or isolating a work area from within an existing waterbody to facilitate construction.

Water taking for highway construction projects shall be in compliance with Ministry of Environment, Conservation and Parks (MECP) legislative requirements.

517.2 REFERENCES

Guideline for MTO Foundation Engineering Services
Provincial Engineering Memoranda
MTO Highway Drainage Design Standards
MTO IDF Curve Look Up Tool
Interpretive Bulletin for Water Taking Exemptions and Environmental Activity Sector Registry (EASR) Regulation (November 2016)

517.3 TENDER ITEMS

Item Code	Title	Col Type	U.O.M.	PQP
0517-0010	Dewatering System	Normal	Lump Sum	No
0517-0020	Temporary Flow Passage System	Normal	Lump Sum	No

517.4 SPECIFICATIONS

The requirements for dewatering system and temporary flow passage system are specified in OPSS 517.

517.5 SPECIAL PROVISIONS

517.5.1 Standard Special Provision

SSP 517F01, Amendment to OPSS 517 for Return Period Flow and Preconstruction Survey Distance is required.

517.5.2 Non-Standard Special Provisions (NSSPs)

Preparation of site-specific NSSPs may be required.

517.6 STANDARD DRAWINGS - None

517.7 DESIGN

517.7.1 General

A dewatering system is used for the removal of groundwater and includes stormwater resulting from rainfall events (or leakage from the watercourse coming through isolation measures (i.e., cofferdam)) from within an excavation and may include use of a groundwater control system.

A temporary flow passage system is used for the passive (without pumping) or active (with pumping) channelization, separation and / or isolation of a work area within an existing waterbody, including contingency measures to manage higher flows.

The Contractor is responsible for the design, installation, operation, maintenance and removal of any dewatering and temporary flow passage systems.

Designers shall refer to the EPO Interpretive Bulletin Water Taking for guidance on water taking activities on highway construction projects.

517.7.2 Use of Dewatering System and Temporary Flow Passage System Items

The dewatering system item shall be assumed to be required for all excavations. The dewatering item may be excluded when recommended by the geotechnical and / or foundation engineer, in consultation with the MTO Geotechnical and / or Foundations Office. This shall be based on site specific conditions, including the level of dewatering efforts required.

The temporary flow passage system item shall be used at locations where any of the following conditions apply:

a) All culverts with a span equal to or greater 3 m or bridge replacement or rehabilitation work.

b) The design storm return period for a temporary flow passage system, as determined according to MTO Highway Drainage Design Standard TW-1, exceeds 5 years.

c) The Temporary Flow Passage System is to be continuously in the watercourse for greater than a 30-Day duration.

d) Where a separate item is recommended by the drainage design Engineer.

At locations where the dewatering system or temporary flow passage system item are not used, the work required to control the water is part of the associated work item(s).

Only one or one of each item shall be used for each location where the dewatering system or temporary flow passage system is used. The item selection depends on the work required and/or the site conditions, and/or as recommended in the Foundation Investigation and Design Report or the Pavement Design Report.

Typically, foundation investigations are carried out for the construction of new foundation components. However, a foundation investigation may be appropriate solely for the purpose of providing soil and groundwater information for dewatering or temporary flow passage system bidding and design. Consult with a foundation or geotechnical engineer to determine if the site conditions warrant this investigation.

Where complex groundwater conditions are present (artesian conditions, potential boiling or heave of the subgrade etc) the designers should consider preparation of a Groundwater Assessment Report which can be included in the contract. The Groundwater Assessment Report should be in accordance with the latest version of the Guideline for MTO Foundation Engineering Services from the Foundations Library Website (https://foundation.mto.gov.on.ca/)

517.7.3 Source of Information

Sources of information include the Foundation Investigation and Design Report and hydrology and hydraulic analysis information for the design of the associated work.

517.7.4 Information to be Provided to Bidders

The following shall be provided for each location requiring the dewatering system or temporary flow passage system item:

a) The minimum design storm return period, for temporary flow passage system item only as determined by TW-1 of the MTO Highway Drainage Design Standards

b) Design flow rates corresponding to the 2, 5, 10 and 25-year return periods of the waterbody. The preconstruction survey distance, if required, that corresponds to an identified dewatering location.

c) The minimum lowered groundwater depth below the base of the excavation.

d) Whether fish passage should be maintained during construction and whether additional design Engineer requirements should be included in the contract.

e) When available, the Foundation Investigation Report and/or soils borehole logs.

Full engineering cross sections through the dewatering system and temporary flow passage system item locations and drainage channel cross sections obtained for the purpose of hydraulic analysis should be provided, when available.

517.7.5 Non-Standard Special Provisions

A NSSP is required when flow rates through the work site requiring dewatering or temporary flow passage system are influenced by upstream control structures. Contact information, operating schedules, and other relevant information to be provided.

NSSPs that ‘red-flag’ site conditions or require system components (eg. tremie plug for cofferdams) are included when recommended by the foundation engineer.

517.8 COMPUTATION

These are lump sum items, no quantity computation is required.

517.9 DOCUMENTATION

517.9.1 Contract Drawings

Normally the contractor designs the temporary flow passage system alignment.

However, when a temporary flow passage system must be constructed along a specific alignment, for example as a result of consultation with regulatory agencies, show the alignment on a drawing detail. When the alignment of the temporary flow passage system must be revised for different contract stages, show the alignment revision for each stage.

517.9.2 Quantity Sheets

The ministry's Contract Preparation System (CPS) is used for the preparation of Quantity Sheets. These items are documented on the "Quantities - Miscellaneous 1" sheet in CPS.

A separate dewatering system or temporary flow passage system item shall be used for each location requiring the item. A separate quantity sheet column is required for each item.

The location and position column of the quantity sheet shall show the station-to-station limits of the area requiring dewatering, and a description of the work requiring dewatering eg. Sta. 12+455 – 12+490, C/L Culvert Replacement.

A value of 100% is entered in the item quantity column. The applicable Tender Totals are automatically transferred to the Form of Tender by CPS.

517.9.5 Documentation Accuracy

Stations are recorded to the nearest whole metre.