

## **PART S10 EARTHWORKS FOR STRUCTURES**

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#### **1. GENERAL**

- .1 This Part specifies the requirements for earthworks construction associated with major structures such as bridges and major drainage works (spans exceeding 4.2 m). If roadworks are included in this Contract, refer to Part R10 "Construction of Earthworks" for the requirements for the construction of road earthworks.
- .2 If the work under the Contract is associated with an existing structure, any drawings of that structure provided by the Principal may not necessarily depict all work carried out on that structure during its lifetime.

#### **2. QUALITY REQUIREMENTS**

- .1 At a minimum, the Contractor's Quality Plan must include the following documents, procedures and/or instructions:
  - (a) dewatering of the site where excavation takes place below the water table / surface; and
  - (b) construction of temporary works, including details of proposed temporary retaining structures.
- .2 If not submitted beforehand, this documentation must be submitted at least 28 days prior to the commencement of site work.
- .3 Provision of the documentation listed in this clause shall constitute a **HOLD POINT**.

#### **3. SITE PREPARATION AND EXCAVATION**

- .1 Refer to Part CH50 "Environmental Protection Issues" for vegetation removal and other environmental management requirements.
- .2 Unless specified otherwise, the Contractor must:
  - (a) restrict the area of site preparation / excavation to the minimum practicable for construction of the works;
  - (b) strip any topsoil present to a depth of 100mm, stockpile the topsoil and respread it on completed batter slopes;
  - (c) remove all vegetation, loose material, rubbish and existing structures (including fences, bridges, retaining walls, concrete slabs, service pits, tree stumps and kerbing) within the "footprint" of the structure and associated earthworks; and
  - (d) fill any over-excavation with Grade 10 concrete.
- .3 A **HOLD POINT** shall apply after completion of excavation.
- .4 Unless specified otherwise, any surplus excavated material which cannot be reused in the Works must be removed from the site and disposed of by the Contractor.

#### **4. COFFERDAMS AND DEWATERING SYSTEMS**

- .1 Where the work is to be undertaken below the water table / level, the Contractor must:
  - (a) supply and install all cofferdams / dewatering systems necessary for the execution of the work;
  - (b) ensure that the structures / systems are as watertight as practicable so as to prevent damage to the foundation material or concrete in footings by erosion or percolation;

- (c) ensure that there is sufficient clearance to the footing to enable inspection of footing concrete after forms are removed;
- (d) ensure that any dewatering is carried out in such a manner as to preclude the possibility of movement of water through fresh concrete; and
- (e) entirely remove the cofferdams / dewatering systems at the completion of the works in a manner which avoids damage to the substructure.

## 5. **FOUNDATION PREPARATION CONCRETE**

- .1 A layer of Grade 10 mass concrete must be placed over the whole of the foundation area as shown on the drawings.

## 6. **BACKFILL**

### **Extent**

- .1 All spaces excavated and not occupied by permanent work must be backfilled to the extent shown on the drawings.

### **Material**

- .2 In addition to any other requirements specified, material used for backfill must be:
  - (a) free draining in locations where it is necessary to prevent the build up of hydrostatic pressures;
  - (b) resistant to scour and erosion when used on batters; and
  - (c) develop sufficient strength to ensure it is stable and does not undergo post construction settlement.

### **Placing**

- .3 Prior to placing backfill, a **HOLD POINT** shall apply.
- .4 The Contractor must:
  - (a) remove any silt, rubbish and foreign material from the excavation;
  - (b) place the backfill in horizontal layers not exceeding 150 mm thickness (loose);
  - (c) where backfill is to be placed on both sides of wing walls or retaining walls, bring the backfill up level with a maximum height differential of 300 mm;
  - (d) not place the backfill against concrete which is less than 48 hours old; and
  - (e) not place the backfill against wingwalls or retaining walls until all cast in place concrete has reached the 28 day characteristic compressive strength and is at least 14 days old.
- .5 Unless specified otherwise, the compaction requirements and frequency of testing must be as specified in Part R10 "Construction of Earthworks".

## 7. **HOLD POINTS**

- .1 The following is a summary of Hold Points referenced in this Part:

<b>CLAUSE REF.</b>	<b>HOLD POINT</b>	<b>RESPONSE TIME</b>
2.3	Submission of Procedures	7 days
3.3	After completion of excavation	1 hour
6.3	Prior to placing backfill	1 hour

## 8. **PAYMENT**

- .1 This clause only applies where a Provisional Sum or Provisional Quantity has been included in the schedules which provides for payment for excavation of rock.
- .2 Payment under the Provisional Sum or Provisional Quantity will only be made where material is encountered which cannot be excavated at 30 cubic metres (loose) per hour by a Class 85 excavator. If rates are included, the rate is cubic metre (solid) and it is deemed to be an "extra over" cost.