

## **Part 1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Section 31 62 19 - Timber Piles.
- .3 Section 05 50 00 - Metal Fabrications

### **1.2 DELIVERY, STORAGE AND HANDLING**

- .1 Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage and handling.
- .2 Replace damaged piles as directed by Departmental Representative.
- .3 Load transport and deliver piles.
- .4 Supply piles as required to complete work.

### **1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **1.4 EXISTING CONDITIONS**

- .1 Sub-surface investigation report associated with the logs provided on the drawings are available for viewing.
- .2 Notify Departmental Representative in writing if subsurface conditions at site differ from those indicated and await further instructions.

### **1.5 SCHEDULING**

- .1 Submit schedule of planned sequence of driving to Departmental Representative for review, not less than two weeks prior to commencement of pile driving.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Supply full length piles as indicated and provide equipment to handle full length piles without cutting and splicing length of piles shown on drawings.
- .2 Do not splice piles without written approval of Departmental Representative. When permitted, provide details for review. Design details of splice to bear dated signature stamp of professional engineer registered or licensed in Province of PEI, Canada.
- .3 Supply pile points as shown on drawings.

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- .4 Pile driven lengths are based on tip to cut off elevations as indicated. Pile supply lengths are based on estimated driven lengths plus approximately 1.0 m above cut off elevations for timber piles.
  - .5 Piles to be driven to bedrock or as indicated elevations on drawings.

### **Part 3 Execution**

#### **3.1 EQUIPMENT**

- .1 Prior to pile installation, submit to Departmental Representative for review, details of equipment for installation of piles.
  - .1 Impact hammers: provide manufacturer's name, type, rated energy per blow at normal working rate, mass of striking parts of hammer, mass of driving cap and type and elastic properties of hammer and pile cushions.
  - .2 Non-impact methods of installation such as auguring, jacking, vibratory hammers or other means: provide full details of characteristics necessary to evaluate performance.
- .2 Hammer:
  - .1 Use appropriate size of hammer or other means to achieve the required tip elevation and refusal criteria.
- .3 Leads:
  - .1 Construct pile driver leads to provide free movement of hammer. Hold leads in position at top and bottom, with guys, stiff braces, or other means to ensure support to pile while being driven.
  - .2 Length: except for piles driven through water, provide sufficient length of leads to ensure that use of follower is unnecessary.
  - .3 Swing leads:
    - .1 Obtain approval from Departmental Representative prior to using swing leads. Firmly guy top and bottom to hold pile in position during driving operation.

#### **3.2 PREPARATION**

- .1 Ensure that ground conditions at pile locations are adequate to support pile driving operation and load testing operation. Make provision for access and support of piling equipment during performance of Work.

#### **3.3 FIELD MEASUREMENT**

- .1 Maintain accurate records of driving for each pile, including:
  - .1 Type and make of hammer, stroke or related energy.
  - .2 Other driving equipment including water jet, driving cap, cushion.
  - .3 Pile size and length, location of pile in pile group, location or designation of pile group.

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- .4 Sequence of driving piles in group.
  - .5 Number of blows per metre for entire length of pile and number of blows per 250 mm for last 1000 mm.
  - .6 Final tip and cut-off elevations.
  - .7 Other pertinent information such as interruption of continuous driving, pile damage.
  - .8 Record elevation taken on adjacent piles during before and after driving of each pile.
- .2 Provide Departmental Representative with three copies of records.

### **3.4 DRIVING**

- .1 Use driving caps and cushions to protect piles. Reinforce pile heads as required by Departmental Representative. Piles with damaged heads as determined by Departmental Representative will be rejected.
- .2 Hold piles securely and accurately in position while driving.
- .3 Deliver hammer blows along axis of pile.
- .4 Cut off piles neatly and squarely at elevations as indicated.
- .5 Remove cut-off lengths from site on completion of work.

### **3.5 DESIGN LOAD CAPACITY**

- .1 Installation of each pile will be subject to approval of Departmental Representative.
  - .1 Departmental Representative will be sole judge of acceptability of each pile with respect to final driving resistance, depth of penetration or other criteria used to determine load capacity.
  - .2 Departmental Representative to approve and cut off final driving of all piles prior to removal of pile driving rig from site.

### **3.6 OBSTRUCTIONS**

- .1 Where obstruction is encountered that causes sudden unexpected change in penetration resistance or deviation from specified tolerances, proceed as directed by Departmental Representative.

### **3.7 REPAIR/ RESTORATION**

- .1 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.

### **3.8 PROTECTION**

- .1 Arrange sequencing of pile driving operations and methods to avoid damages to adjacent existing structures.
- .2 When damages occur, remedy damaged items to restore to original or better condition at own expense.

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**3.9 DRIVING TOLERANCES**

- .1 Install timber piles to the following tolerances: pile needs to be within 50 mm of locations shown on drawings and to permit installation of timber pile caps.

**3.10 DAMAGED OR DEFECTIVE PILES**

- .1 Departmental Representative may reject any pile that is driven out of position, twisted or damaged during handling and/or driving.
- .2 Remove rejected pile and replace with new and if necessary a longer (?) pile.
- .3 No extra charges will be paid for the above work.

**END OF SECTION**