PART 1 - GENERAL

1.1 MEASUREMENT PROCEDURES

.1 Measure supply and installation of sheet piling as per Section 01 10 10.

.2 Nuts, turnbuckles, pipe sleeves, washers, transfer bolts, and other associated hardware supplied and incorporated in Work will be considered incidental to the Work.

.3 Square meter measurement for installation of SSP to be based on tip to cutoff length.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 6/A 6M-[02b], Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
.2 ASTM A 307-[02], Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.

.2 Canadian Standards Association (CSA International).
.1 CAN/CSA G40.20/G40.21-[98(June 2000)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CSA W47.1-[92(R2001)], Certification of Companies for Fusion Welding of Steel Structures.
.3 CSA W47.1S1-[M1989(R1998)], Supplement No.1-1989 to W47.1-1983, Certification of Companies for Fusion Welding of Steel Structures.
.4 CSA W59-[M1989(R2001)], Welded Steel Construction (Metal Arc Welding) (Metric Version).
.5 CSA W59S1-[M1989(R1998)], Supplement

No.1-M1989, Steel Fixed Offshore Structures, to W59-M1989, Welded Steel Construction (Metal Arc Welding).

1.3 SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit shop drawings for following items:
.1 Tie rods, bearing plates and nuts.
.2 Wales including splices, spacers and washers.
.3 Bolts.

.3 At least 2 weeks prior to fabrication, submit to Departmental Representative two copies of steel producer certificates in accordance with mill test reports in accordance with CAN/CSA-G40.20/G40.21.

.4 Provide Departmental Representative with copy of certification for fusion welding in accordance with CSA W47.1 and CSA W47.1S1.

.5 Submittals shall be stamped and signed by an engineer licensed to practice in the province of Prince Edward Island.

1.4 QUALITY ASSURANCE

.1 Materials inspected or tested by Departmental Representative which fail to meet contract requirements will be rejected.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, Contractor to pay costs for additional tests or inspections. Departmental Representative to approve corrected work.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Use slings for lifting sheet piling so that mass is evenly distributed and sheet piling is not subjected to excessive bending stresses.

.2 Store sheet piling on level ground or provide supports so that sheet piling is level when stored.
.1 Provide blocking at spacing not exceeding 5m so that there is no excessive sagging in sheet piling.
.2 Overhand at ends not to exceed 0.5m.
.3 Block between lifts directly above blocking in lower lift.

.3 If material is stock-piled on structure, ensure that structure is not overloaded.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Steel sheet Z-profile piles supplied: As per requirements indicated in drawings.

.2 Refer to drawing M1 for specifications on structural steel for wales, bearing plates, wales splices, capping channels, support angles and miscellaneous steel.

.3 Tie rods, sleeve nuts and turnbuckles:
.1 Tie rods: refer to drawing M1 for Grade.
.2 Tie rods: to continuously threaded bar with single corrosion protection.
.3 Sleeve nuts, and connector sleeves: to have load capacity in excess of capacity of tie rod.
.4 Preassemble, mark and test tie rod assemblies in shop. Align threaded connection to following tolerances at sleeve nut or connector sleeve: 1/80 of normal rod diameter, deviation of centre line, 1 in 160.

.4 Nuts and bolts: hexagon nuts, bolts, and washers to have full capacity of the tie rod.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Do welding in accordance with [CSA W59] [and] [CSA W59S1], except where specified otherwise.

.2 Do not begin sheet pile installation until approved by Departmental Representative.

.3 Do sheet pile installation Work in accordance with Section 31 61 13 - Pile Foundations, General Requirements except where otherwise specified.

.4 Submit full details of method and sequence of installation of sheet piling to Departmental Representative for approval prior to start of sheet pile installation work. Details must include templates, bracing, setting and driving sequence and number of sheet piles in panels for driving.

.5 When installing sheet piles in bulkhead wall, standard industry installations procedure are acceptable. An example of such a procedure is as follows:

.1 Provide temporary templates or bracing to hold piles in alignment during setting and driving.

.2 Drive piles two at a time. Drive first double pile to full depth, then place panel of five to eight double sheet piles in templates and secure last (end) double pile in location to prevent spreading of piles in panel.

.3 Drive end double pile in panel sufficiently deep into ground to ensure that it will remain plumb, then, drive remaining double piles in panel to full depth beginning with double pile next to end double pile and finishing with double pile next to double pile first driven.

.4 After one panel has been driven, place and drive succeeding panels in similar manner. Complete the driving of end double

pile of first panel after double piles of second panel have been driven.

.6 When installation is complete, face of wall at top of sheet piles to be within 75 mm of location as indicated and deviation from vertical not to exceed 1 in 100.

3.2 OBSTRUCTIONS

.1 If obstruction encountered during driving, leave obstructed pile and proceed to drive remaining piles. Return and attempt to complete driving of obstructed pile later.

.2 Advise Departmental Representative immediately if impossible to drive pile to full penetration, and obtain direction from Departmental Representative on further steps required to complete Work.

3.3 HOLES

.1 Patch holes in sheet pile wall, except where permanent holes are indicated.
.1 Use 12mm thick plate of material equal to that of piling to patch holes and overlap not less than hole diameter.
.2 Weld to develop full strength of plate.

.2 Drill any required holes in piling. Do not use flame cutting without permission of Departmental Representative.

3.4 CUTTING

.1 When flame cutting tops of piles, and flame cutting holes in piles approved by Departmental Representative, use following procedure:
.1 When air temperature is above 0 degrees C, no pre-heat is necessary.
.2 When air temperature is below 0 degrees C, pre-heat until steel 25 mm on each side of line of cut has reached a temperature very warm to hand (approximately 35 degrees C). Temperature indicating crayon marks may be used to measure temperature.
.3 Use torch guiding device to ensure

smooth round holes or straight edges.

.4 Make cut smooth and free from notches throughout thickness. If grinding is employed to remove notch or crack, finished radius to be minimum 5 mm.

3.5 SPLICING

.1 Use full length piles. Splicing is not permitted.

3.6 TIE ROD ANCHORAGE SYSTEM

.1 Do not place backfill behind anchored bulkhead until piles have been completely driven, adjusted and secured in final position by anchorage system.

.2 Support tie rods at intervals along their length as indicated.

.3 Fit and adjust tie rod systems so that connections at waling and anchor end of tie rods are tight before backfilling.

3.7 BACKFILLING

.1 Protect piling tie rods and anchorage systems from damage or displacement during backfilling operations.

END OF SECTION