**SECTION 31 41 16**

# SHEET piling

**BASED ON DFD MASTER SPECIFICATION DATED 10/1/2012**

This section has been written to cover most (but not all) situations that you will encounter. Depending on the requirements of your specific project, you may have to add material, delete items, or modify what is currently written. The Division of Facilities Development expects changes and comments from you.

# P A R T 1 - G E N E R A L

### SCOPE

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to provide piling and other work, as required in these specifications, on the drawings and as otherwise deemed necessary to complete the work. Included are the following topics:

PART 1 - General

Scope

Related Work

Submittals

Quality Assurance

Permits/Fees

Provisions for Future Work

Protection/Restoration
Survey and Staking

Record Drawings

PART 2 - Materials

Steel Sheet Piling

Fiberglass Reinforced Resin Sheet Piling

Joint Sealer

PART 3 - Execution

General

Fiberglass Reinforced Resin Sheet Piling

#### rELATED wORK

Applicable provisions of Division 1 govern work under this Section.

00 00 00 – (Section Title)

00 00 00 – (Section Title American Society for Testing and Materials (ASTM):

A328/A328M-03 Standard Specification for Steel Sheet Piling

A572/A572M-04 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

### Submittals

Provide manufacturers product information (cut sheets) and O&M information for materials including:

* Piling material
* Piling joint sealer material

Provide piling layout plan indicating starting point for laying, direction for laying, and number of piles.

Provide pile driving plan indicating proposed materials, equipment and methods of installation.

Provide copies of record drawings.

**quality assurance**

Maintain and submit record drawings.

#### Permits/FEES

Contractor shall be solely responsible for obtaining all permits necessary to complete the work. Contractor shall pay all fees associated with obtaining permits. These include, but are not limited to permits for work within public right-of-way, street opening permits, utility connection permits, and plumbing permits.

###### Provisions for future work

Not used.

PROTECTION/RESTORATION

Protect structures, underground utilities and other construction from damage caused by pile installation.

Fully restore all roads and areas damaged in accessing project site or installing piles.

survey and staking

Not used.

record drawings

Note any modifications to proposed pile design, alignment, or driving depth. Record any other deviations from the original design.

# P A R T 2 - M A T E R I A L S

**steel sheet piling**

Steel sheet piling shall meet the requirements of ASTM A328-03 for section PZ 22, or ASTM A572-04 (Gr50) for section CS 60. Sheet pile shall be provided with interlocking joints. Provide joint sealer that result in joints having a permeability of 1x10-5 cm/sec or less.

**fiberglass reinforced Resin sheet piling**

Sheet pile shall be constructed of an engineered material consisting of fiberglass reinforced resin (FRR). Resin shall be polyurethane or polyester based. FRR sheet pile shall be provided in a “Z” section with geometry, dimensions and material thickness that results in an allowable moment of 16,000 ft-lbs/ft or greater. Resins shall be UV stabilized. FRR sheet pile shall be provided with interlocking joints that have a permeability of 1x10-5 cm/sec or less. Northstar-Endurance, Crane Materials International-Geogard, Sheeting Solutions-Nexgen or approved equal.

**JOINT SEALER**

Environmentally safe joint sealer produced specifically for use in reducing permeability in pile joints. Joint sealer may be factory applied or field applied.

**P A R T 3 - E X E C U T I 0 N**

**general**

Provide new piling of type and length indicated. Piles must be driven in complete lengths; splices are not permitted.

Store piles in manner that maintains joint integrity, including preventing damage to joint sealers.

Install piling at locations shown on the drawings. Drawings indicate piling length and top and bottom elevation. Cut off tops of piles as necessary to achieve top elevation.

Access trench, with width up to 3’ and depth up to 2’ from finished grade, may be excavated along alignment of piles. Trench shall be centered on alignment. Upon completion of pile installation, access trench shall be backfilled with granular material and compacted.

Utilize installation equipment including vibratory or drop heads as necessary given site conditions and pile type. Provide and utilize mandrel, helmet or drive shoe as necessary to install piles.

Protect head of pile with cap or other device as necessary. Piles with heads that are damaged above the elevation of the top of the pile will be rejected and require removal and re-installation of the pile.

Provide an installation guide or other device as necessary to assist in driving piles straight and plumb. Piling shall not be driven more than 1/8” per foot out of plumb in the planes both parallel and perpendicular to wall.

Piles shall be installed so that all joints interlocking. Joints that do not interlock will be rejected and require removal and re-installation of the pile.

Soil boring logs are included elsewhere in the contract documents.

**fiberglass reinforced Resin sheet piling**

Install FRR sheet piling in accordance with manufacturer’s recommendations. Contractor’s base bid shall include minimum of 1 day onsite oversight by manufacturer’s representative upon start of installation.

FRR sheet piling shall not be installed when ambient air temperatures are less than 40 deg F. When ambient temperatures exceed 40 deg F., warm piles as necessary prior to installation to avoid cracking or other damage.

**END OF SECTION**