April 20, 2017

REVISION OF SECTION 502

EXTENSIONS AND SPLICES

**NOTICE**

This is a standard special provision that revises or modifies CDOT’s *Standard Specifications for Road and Bridge Construction.* It has gone through a formal review and approval process and has been issued by CDOT’s Project Development Branch with formal instructions for its use on CDOT construction projects. It is to be used as written without change. Do not use modified versions of this special provision on CDOT construction projects, and do not use this special provision on CDOT projects in a manner other than that specified in the instructions unless such use is first approved by CDOT’s Standards and Specifications Unit. The instructions for use on CDOT construction projects appear below.

Other agencies which use the *Standard Specifications for Road and Bridge Construction* to administer construction projects may use this special provision as appropriate and at their own risk.

**Instructions for use on CDOT construction projects:**

Use in projects having steel piling.

Section 502 of the Standard Specifications is hereby revised as follows:

Delete subsection 502.08 and replace with the following:

**502.08 Extensions and Splices.** There will not be a limit placed on the number of splices allowed for steel piles; however, payment will be limited to two splices per pile. Commercial splices may be used if approved by the Engineer.

Full length piles shall be used unless otherwise approved.

All welded splices shall be made by using a prequalified joint design in accordance with AWS D1.1. The CJP design shall include beam copes (weld access holes) through the web of the pile at the junctures with the flanges. Copes shall be made in accordance with AWS D1.1, Section 5.17. If backing is used it shall be in accordance with AWS D1.1, removal of the backing after welding is not required.

Personnel performing quality assurance (QA) and process control (PC) welding inspection shall be qualified as a certified welding inspector (CWI) in accordance with AWS D1.1, Chapter 6. All welded pile splices shall be made in accordance with a written Welding Procedure Specification (WPS), as submitted by the Contractor. The WPS shall be reviewed, and approved by the Contractor’s CWI, prior to welding any piling splices on the project. The WPS shall list all essential variables of the process in accordance with AWS D1.1. The WPS shall be available for review during welding operations.

All welded splices shall be made with low hydrogen electrodes. The Contractor shall adhere to the low hydrogen practice for electrodes in accordance with AWS D1.1.

All cuts at splices shall be made normal to the longitudinal axis of the pile. The cut-off portion may be driven to start the next pile or it may be welded to previously driven piles to provide the necessary extension length.

All welders shall be currently qualified in accordance with AWS D1.1. Welder qualifications shall be approved by the Contractor’s CWI prior to the start of welding.

The Contractor shall provide an AWS Certified Welding Inspector (CWI) on the project site for PC. The CWI shall inspect all production stages of the welded splice, including assembly of the splice joint, during welding, and after welding to ensure that workmanship and materials meet the requirements of the contract documents. Prior to CDOT acceptance, the CWI shall submit documentation that all material and workmanship is in accordance with the Contract. The CWI shall keep a record of all findings, which shall be available to the Engineer at any time.

The first two CJP welded splices shall be ultrasonically tested (UT) for acceptance in accordance with Table 6.3 of AWS D1.1. If both of the UT tested CJP splices are determined to be acceptable, no further UT testing of CJP splices will be required. If either of the first two UT tested CJP splices are not acceptable, UT testing of CJP splices shall continue until two consecutive tests are acceptable.

Personnel performing UT testing of CJP splices shall be qualified in accordance with the current edition of the American Society for Nondestructive Testing Practice No. SNT-TC-1A. Individuals who perform nondestructive testing shall be qualified for NDT Level II.

In subsection 502.12, delete the fifth paragraph and replace with the following:

Partial Joint Penetration (PJP) welded splices for piles, when specified in the plans, will be measured as the additional length of pile, each splice considered as 3 linear feet.

CJP welded splices, when specified in the plans, will be the actual number completed and accepted.

Subsection 502.13 shall include the following:

**Pay Item Pay Unit**

Complete Joint Penetration (CJP) Splice Each

All costs for providing Certified Welding Inspector (CWI) services for Partial Joint Penetration (PJP) welded splices will not be measured and paid for separately, but shall be included in the additional measured length of pile in accordance with subsection 502.12.

Payment for completing the CJP splices shall include the CJP splice, Ultrasonic Testing, Certified Welding Inspector (CWI) services and all required documentation.