Chapter 500

Structures - 19

ITEM 502, PILING

Acceptable welding rods for splicing H piles and pipe piles are E7016 and E7018. These identifying numbers will be found on the electrodes and on their container. Welding is usually performed at the project construction site.

There is a standard special revision to Section 502 of the Standard Specifications, for Piling, requiring the use of a Pile Driving Analyzer (PDA) when piling is to be driven on a project.

ITEM 503, DRILLED SHAFTS

Inspectors shall maintain drilling and construction records on Form 1333. Drilling progress and cuttings should be watched. For example, a slow advance rate in a wet sand may indicate sloughing of the boring requiring casing or slurry to stabilize the hole. Record the use of any slurry including type, properties, quantity, and disposal. Concrete properties shall be tested and recorded to ensure a proper pour. The concrete volume and depth should be recorded at regular intervals throughout the pour to help map the shaft for voids or collapse.

ITEM 504, SOIL NAIL WALLS

Drainage during construction is very important. Saturation of the wall face and retained materials prior to completion of the wall and drainage features may lead to wall distress. Be aware of the geology and site conditions. Work should stop and the design engineer should be contacted if a significant change in conditions is observed during excavation. Verification and proof testing shall be competed and recorded per the plans. Care needs to be taken during the installation of the toe drain at the base of the completed wall. Over excavation at the toe for the drain installation my result in wall distress.

ITEM 506, GABIONS AND SLOPE MATTRESS

Gabions

A necessary feature of the rock basket is the weave of the wire fabric, which must "give" in all directions and not unravel if a wire should break. Field personnel will inspect for compliance with the Non-Raveling Construction requirement in Subsection 712.09 of the Standard Specifications.

ITEM 509, STRUCTURAL STEEL

Fabrication

The Staff Bridge Fabrication Inspectors are responsible for the testing, inspection, and documentation of shop fabricated structural steel bridges. They will obtain and review mill test reports, welding procedure reports, and welder qualifications, and assure compliance with project specifications. This will be documented on the final inspection report issued for shop fabricated structural steel bridges.

Field Welding

If any field welding of fabricated structural steel components becomes necessary, the Bridge Design Inspection Unit should be consulted for guidance and assistance. They will also provide guidance in determining defective welds that are not detectable by visual inspection.

Shear Studs

Shear studs are usually inspected during the shop fabrication of structural steel bridges.
Field welded shear studs are inspected by striking the stud with a hammer until it is bent to 45°. Two studs per 100 will be tested. The studs tested that show no sign of failure should be left in the bent position. Studs bent during handling should be left in the bent position. Any studs that are broken off should be replaced by field welding. Additional studs should be tested when a failure occurs. Contact the Staff Bridge Fabrication Inspectors for assistance when excessive failures occur.

Bolts

Rotational capacity tests are required at the job site. Refer to the CDOT Construction Manual. Document the results of this test in Project Files.

ITEM 509, STRUCTURAL STEEL (GALVANIZED) MISCELLANEOUS

Field inspection in some cases cannot be accomplished on a piece-by-piece basis, as it arrives on the project, depending on the size and configuration of the material. Therefore, it is possible for field personnel, during installation to find places that are not adequately galvanized. It is allowable to touch up inadequate or damaged galvanizing with one full brush coat of zinc rich paint meeting the requirements of the Department of Defense DOD-P-21035A, according to 509.27(h) of the Standard Specifications. A Certificate of Compliance is required indicating that the zinc rich paint meets the above specification.

ITEM 510, STRUCTURAL PLATE STRUCTURES (GALVANIZED)

Not pre-tested, but field inspected. A word of caution regarding the storage of galvanized structural plate. Zinc will convert into "white rust" rapidly when it becomes wet in the absence of air.

A rapid loss of zinc may occur when curved sheets are stacked together in such a way that water can get between the sheets and not drain. It is possible to loose the entire protective coating of zinc over large areas in a short period of time under the right conditions of moisture and warmth. To prevent this, the sheets should be stored under cover or stacked so water will drain away rather than be trapped between the sheets.

ITEM 515, WATERPROOFING MEMBRANE

Bridge Deck, All Types

Section 515 of the CDOT's Standard Specifications describe the types of waterproofing membranes which may be used as protection from de-icing salt on concrete bridge decks. In addition, the Standard Specification gives detailed application procedures for membrane types, the protective covering, and hot mix asphalt overlay. These requirements must be strictly adhered to in order to obtain the best possible waterproofing system.

CDOT Materials Forms - Applicable for Structures
Located within
Materials Forms, Instructions & Examples Chapter

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