SECTION 405 - TIMBER BOARDWALK

405.01 DESCRIPTION

This work shall consist of furnishing all materials and constructing timber boardwalk to the lines and grades designated on the construction drawings or as directed by the Commission, including fabricating, erecting, treating and coating of the timber elements as specified in the construction drawings.

405.02 REFERENCE STANDARDS

AASHTO Standard M133
AWPA Standards
M-NCPPC Section 401 – Prefabricated Steel Truss Bridge
Section 403 – Helical Piers
Section 513 – Portland Cement Concrete
MSHA Sections 909.10, 921.05, and 921.06

405.03 DEFINITIONS

Not applicable.

462.04 MATERIALS

A. MSHA Standard Specifications for Construction and Materials, latest edition:

- Bolts and Hardware 909.10
- Structural Timber 921.05
- Preservation Treatments 921.06

B. Timbers shall be pressure treated southern yellow pine or coastal Douglas Fir, grade 1 or better with a minimum Fc of 1200 psi, and shall conform to AASHTO Standard M 168 for Wood Products. All decking shall only consist of Douglas Fir.

C. Preservatives and Pressure Treatment Process shall be in accordance with AASHTO Standard M 133 and American Wood-Preservers' Association (AWPA) standards. All pressure treated timber components shall be free of arsenic and shall be an appropriate Alkaline Copper Quaternary (ACQ) formation for the selected wood materials with minimum retentions of 4 kg/m³ (0.25 lbs/ft³) or 6.4 kg/m³ (0.4 lbs/ft³)
for wood used above ground or in ground contact, respectively.

D. All timber should be select structural material dressed cut S4S (surfaced four sides), except timber decking shall be cut surfaced one side two edges (S1S2E) with rough face placed upward to improve traction. Where adjacent to a pedestrian bridge, timber decking materials shall match materials used for pedestrian bridge decking.

E. All fasteners to be in accordance with AASHTO Standard M 253 and shall be appropriate for selected timber and associated treatment methods.

405.05 SUBMITTALS

A. Contractor shall supply samples of wood, bolts, and hardware. Submit one (1) decking sample that is at least twelve (12) inches long and the full width and thickness of a typical decking board as shown on the drawings.

B. Contractor will provide the following for approval:

1. Manufacturer and/or source data for all materials used including preservatives, wood, bolts, and hardware.
2. Submit a list of equipment anticipated for all boardwalk construction.

C. Contractor or subcontractor must supply evidence of having successfully completed construction of five (5) wood boardwalks in the past 3 years including photographs and references.

405.06 QUALITY ASSURANCE

Boardwalk to meet loading standards for bridges. See Section 401- Prefabricated Pedestrian Bridges. Railings to meet International Building Code Standards, latest edition, for need and requirements.

405.07 CONSTRUCTION

A. Storage and Handling. Store timber in open stacked piles at the site on suitable blocking or platform at least twelve (12) inches above any type or surface or vegetation in a manner to shed water and prevent warping. Protect it from weather by a suitable covering. Ensure that the site selected is not subject to flooding. Handle to prevent the breaking of outer fibers, bruising, or penetrating the surface.

B. Cutting and Boring. Brush coat all cuts in treated timbers and all abrasions (after being carefully trimmed) with two applications of an approved wood preservative
before installing the timber in the structure. When it is determined that treated timbers are damaged beyond repair, remove them from the project and replace them. All sawdust and remnant pieces will be removed from the site and disposed offsite in an approved manner.

C. Equipment shall operate within the LOD to minimize impacts to root systems of adjacent existing trees to remain. Only low impact equipment will be accepted. When clearing for boardwalk construction, trees are to be cut off flush with finished grade. Grubbing under the boardwalk is not allowed.

D. Construction shall be in accordance with the relevant sections of the latest version of MSHA Standard Specifications for Construction Materials Section 462.03 (latest edition), and with all details and notes outlined on the construction drawings.

E. Decking shall be fastened to stringers with #10 wood screws, with a minimum of 3 \( \frac{1}{2} \)" length or at least 1 \( \frac{1}{2} \)" longer than the thickness of the deck board; 3 screws per board per stringer. Screw material shall be compatible material with pressure treatment recommendations.

F. Railings shall be installed wherever the vertical drop from the finished deck elevation to the adjacent finished grade exceeds 30”, or as otherwise directed by the M-NCPCC CM. Where railings are not installed, timber curbs shall be installed along edges and considered incidental to unit price of boardwalk. Bridge railings shall meet a minimum of Test Level 1 as specified in AASHTO LRFP Bridge Design Specifications, Railings. Locate bridge rail and curb splices so that rail and guard members are continuous over at least two posts. Install bridge railings and curb in sections not less than twelve (12) feet long.

G. Contractor that field adjust all connections and terminations to ensure smooth transitions into adjacent features.

H. Wooden decked boardwalk shall not exceed 5% running slope or 1.5% cross slope for a trail and 4.5% or 1.5% for access. All board spacing shall meet ADA Standards for Accessible Design requirements for both gap width and differences in elevation. This includes the space between the boardwalk and adjoining surface.

I. Footings – Helical piers will conform with Section 403 – Helical Piers

**405.08 MEASUREMENT AND PAYMENT**

Payment will be full compensation for all material, labor, equipment, tools and incidental items necessary to complete the work. Piles are excluded. Payment shall be made on a unit rate per linear foot of timber boardwalk and/or railing installed.