## Index 455-101 Series Square CFRP & SS Prestressed Concrete Piles

## **Design Criteria**

AASHTO LRFD Bridge Design Specifications; Structures Detailing Manual (SDM); Structures Design Guidelines (SDG); Fiber Reinforced Polymer Guidelines (FRPG)

#### **Design Assumptions and Limitations**

Index 455-101 is the lead standard for the Square CFRP & SS Prestressed Concrete Pile standard series which includes Indexes 455-101 through 455-130. Use this standard with Indexes 455-102, 455-003, 455-112, 455-114, 455-118, 455-124 and 455-130.

Standard piles are designed to have 1000 psi uniform compression after prestress losses without any applied loads to offset tensile stresses that occur during typical driving.

The piles are designed to have 0.0 psi tension using a load factor of 1.5 times the pile self weight during pick-up, storage and transportation as shown in the "Table of Maximum Pile Pick-Up and Support Lengths" on the standard.

#### **Plan Content Requirements**

In the Structures Plans:

Show and label the piles on the Foundation Layout, End Bent, Intermediate Bent, Pier, Footing, Typical Section and other sheets as required.

Complete the following "Data Table" in accordance with **SDG** 3.5 and **SDM** 11.4 and include it in the contract plans with the "Foundation Layout" sheets. Modify table and notes as required to accommodate the required number of piles, piers and/or bents, use of Test Piles and instrumentation. When not enough space is available on one plan sheet, continuations of the Data Table and/or separate pile cut-off elevation tables are acceptable. See Introduction I.3 for more information regarding use of Data Tables.

For projects without Test Piles change data table column heading "TEST PILE LENGTH (ft.)" to "PILE ORDER LENGTH (ft.)".

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PIER or BENT NUMBER	PILE SIZE (in.)	NOMINAL BEARING RESISTANCE (tons)	NOMINAL UPLIFT RESISTANCE (tons)	MINIMUM TIP ELEVATION (ft.)	TEST PILE LENGTH (ft.)	REQUIRED JET ELEVATION (ft.)	REQUIRED PREFORM ELEVATION (ft.)	FACTORED DESIGN LOAD (tons)	FACTORED DESIGN UPLIFT LOAD (tons)	DOWN DRAG (tons)	TOTAL SCOUR RESISTANCE (tons)	NET SCOUR RESISTANCE (tons)	100-YEAR SCOUR ELEVATION (ft.)	Ø COMPRESSION	I JIII PILE	1 PILE 2	PILE 3	PILE 4	PILE 5	PILE 6	PILE 7
Factored Des	911 2000	Ø				iai bearing Ki	esistance				S [Notes Dat										
UPLIFT RESIS TOTAL SCOUR NET SCOUR R	TANCE RESIST ESISTAI	- The ultimate the 100 y (Specify c ANCE - An essis resista reguire to the VATION - Est	ear scour ele nly when des. timate of the tance provide nate of the u. nce provided d preformed scour elevatic	vation to res ign requires ultimate stau d by the scou ltimate static by the soil f or jetting eli- on.	nt must be ist pullout uplift capa- ic side frin rable soil. side fricti rom the evation	obtained befow of the pile tity). tion		Contrac installa Minimur When a lowerec until th differ 1 for det No jett The Con below t whichew	tor to verif; tion activition m Tip Elevat required jet to the elev e pile drivin from those s ermination of ing will be mtractor sho he 100-year ver is deepe	r locations. ion is re- tting el ation ar g is con- chown o f the re- allowed allowed scour - r.	on of all utilit equired for la evation is sho d continue to mpleted. If j n the table, i required drivin without the a anticipate bei elevation or r	ies prior to a. teral stability wn, the jet sf operate at th etting or prefe te Engineer st	is elevation orming elevat ail be respo e Engineer. jet piles evation,	nsible							

# Payment

Item number	Item Description	Unit Measure
455-34-ABB	Prestressed Concrete Piling (CFRP or SS)	LF

## **Design Aids**









