

## Index 20600 Series Concrete Piles (Rev. 11/16)

### Design Criteria

***AASHTO LRFD Bridge Design Specifications; Structures Design Guidelines (SDG); Structures Detailing Manual (SDM)***

### Design Assumptions and Limitations

Index 20600 is the lead standard for the Square Prestressed Concrete Pile standard series which includes Indexes 20600 through 20631. Use this standard with Indexes 20601, 20602, 20612, 20614, 20618, 20620, 20624, 20630 and 20631.

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.

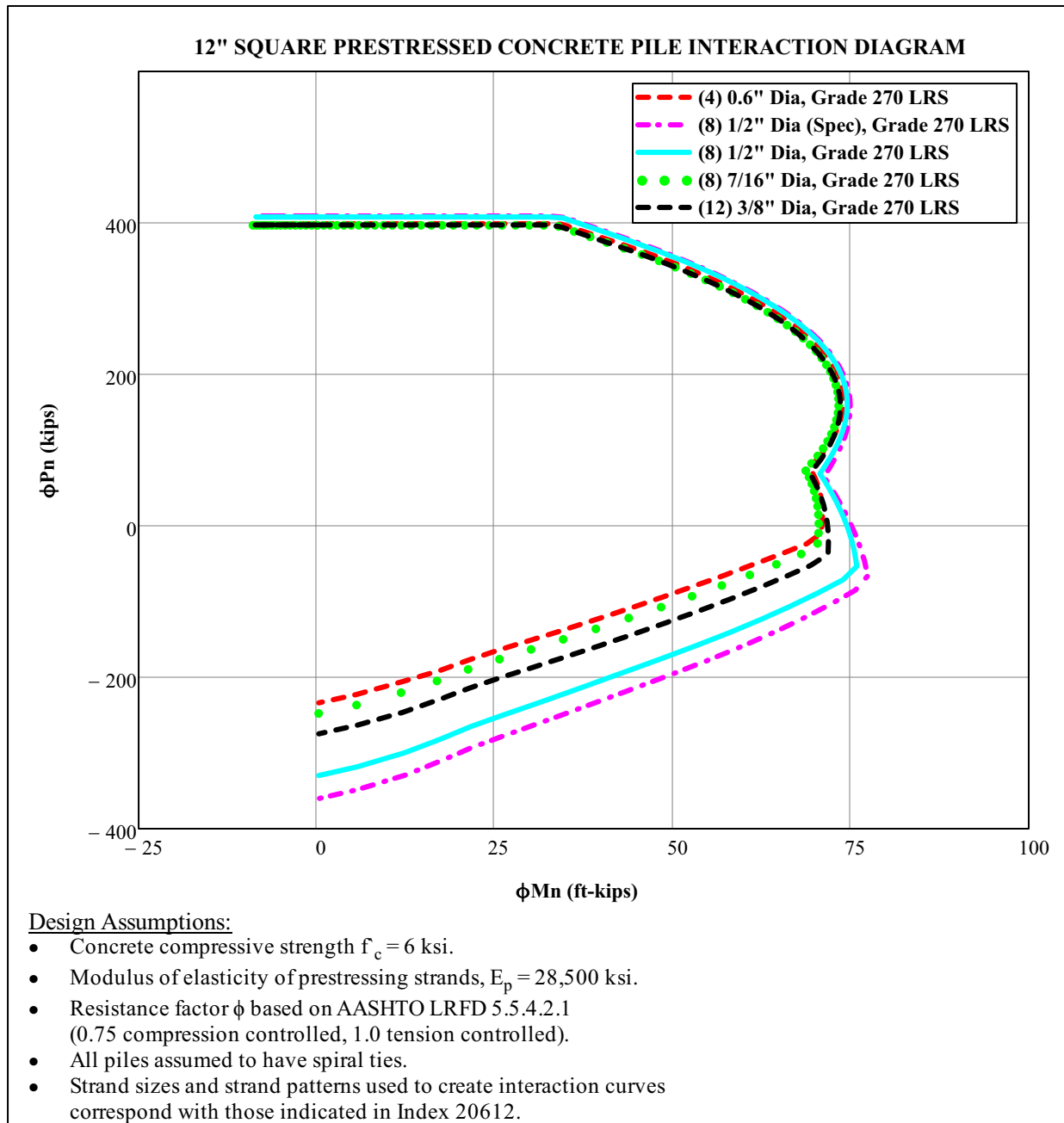
For projects without Test Piles change data table column heading "TEST PILE LENGTH (ft.)" to "PILE ORDER LENGTH (ft.)".

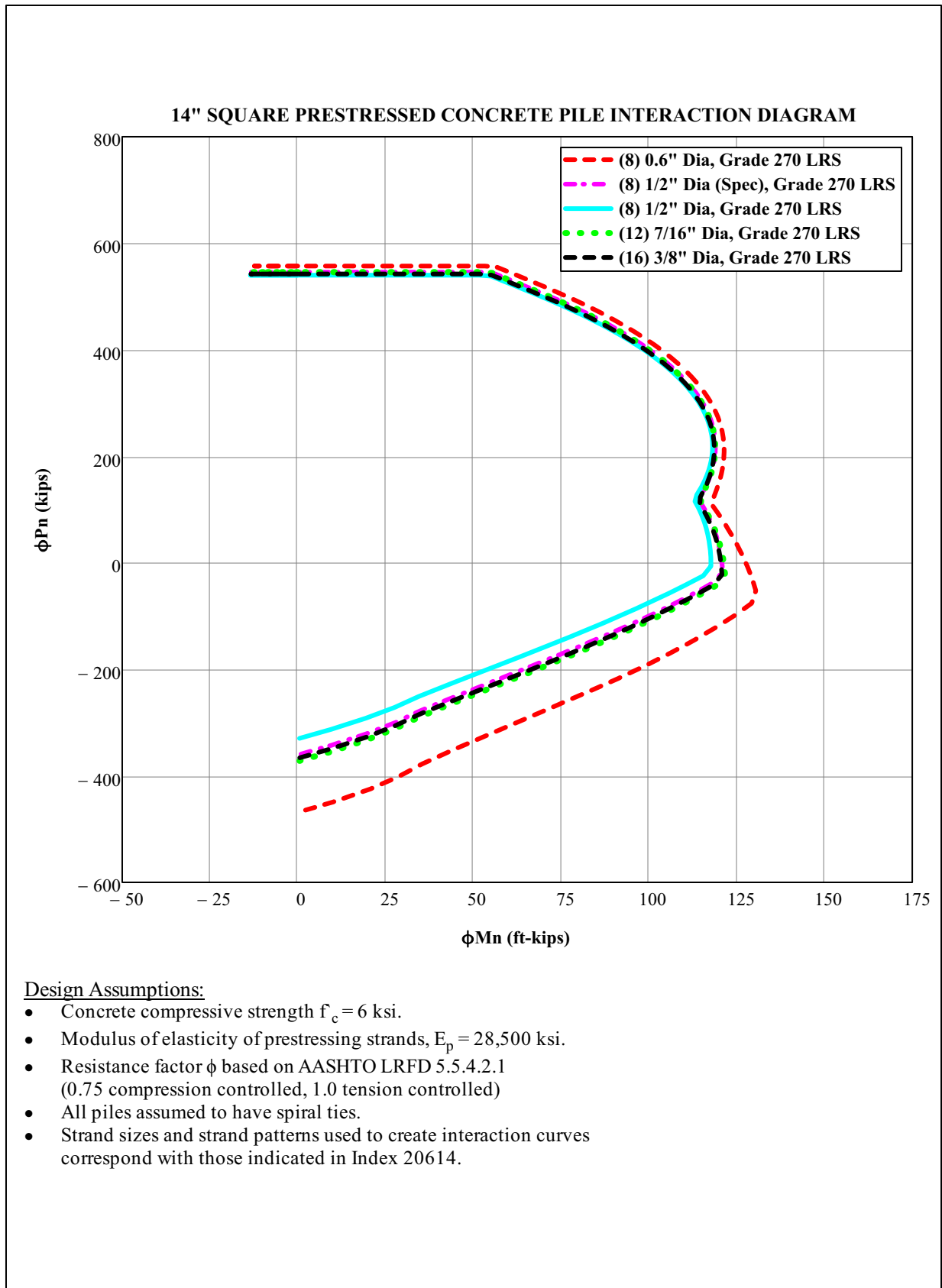


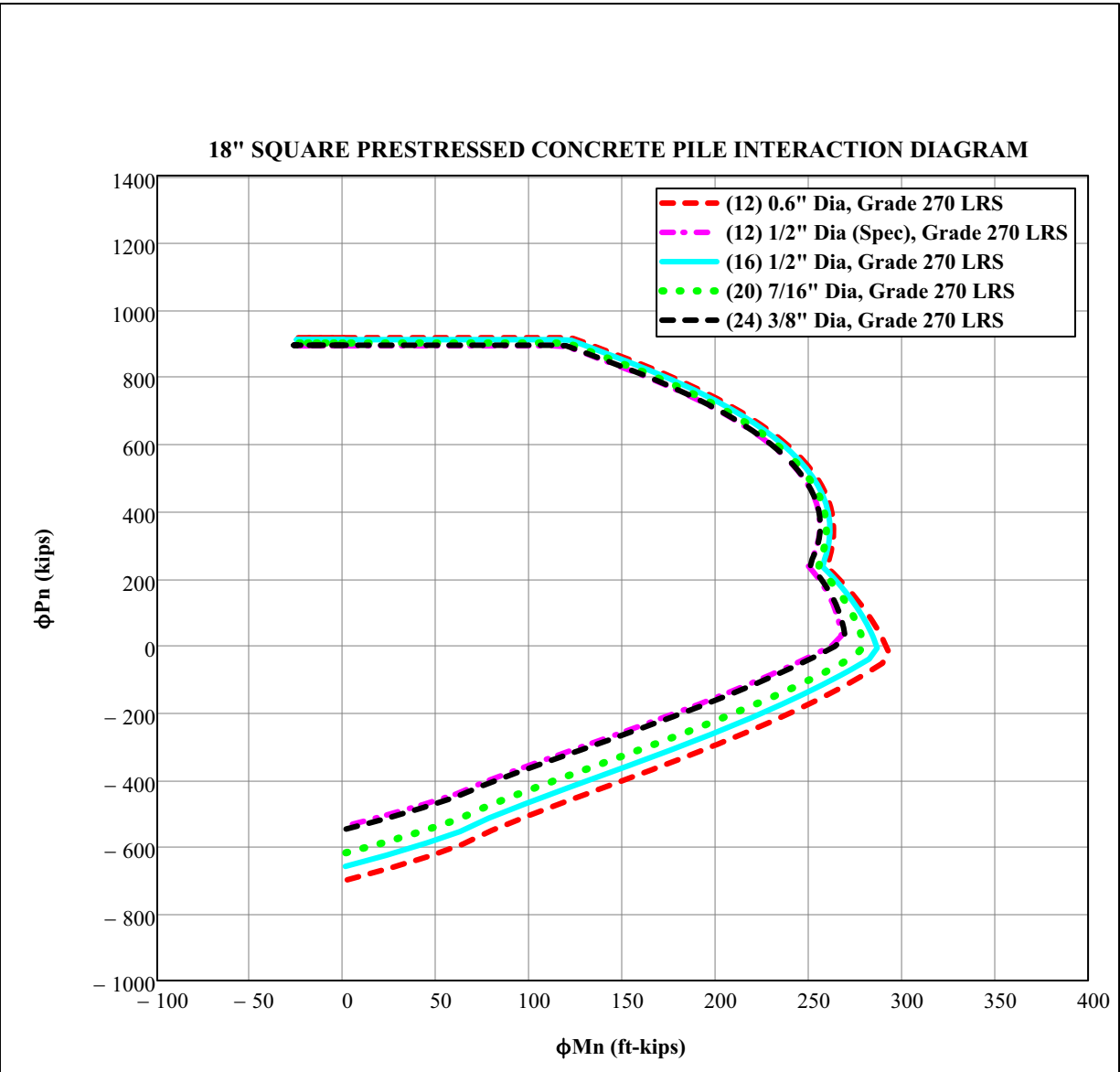
## Payment

Item number	Item description	Unit Measure
455-34-ABB	Prestressed Concrete Piling	LF

## Design Aids

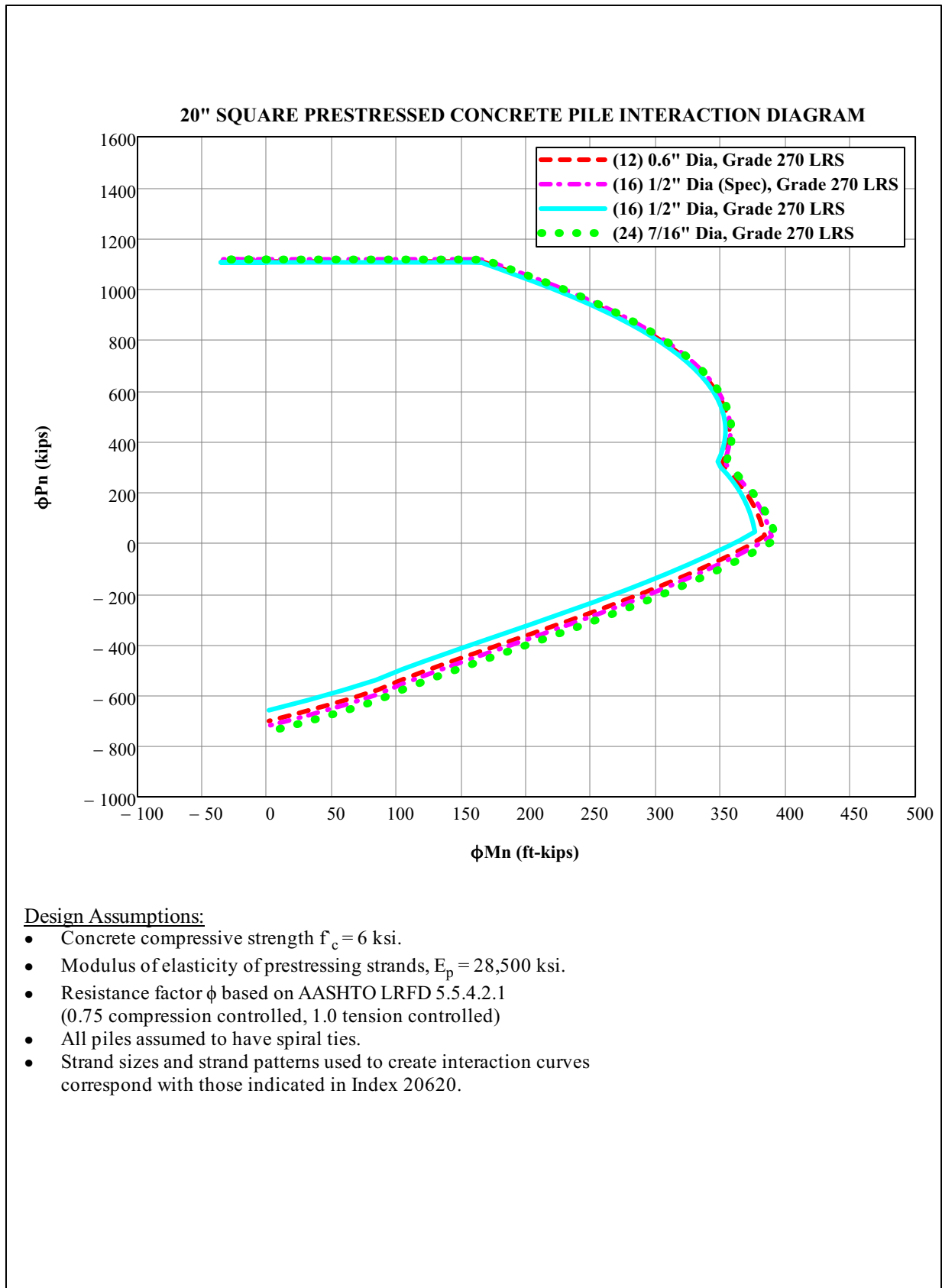


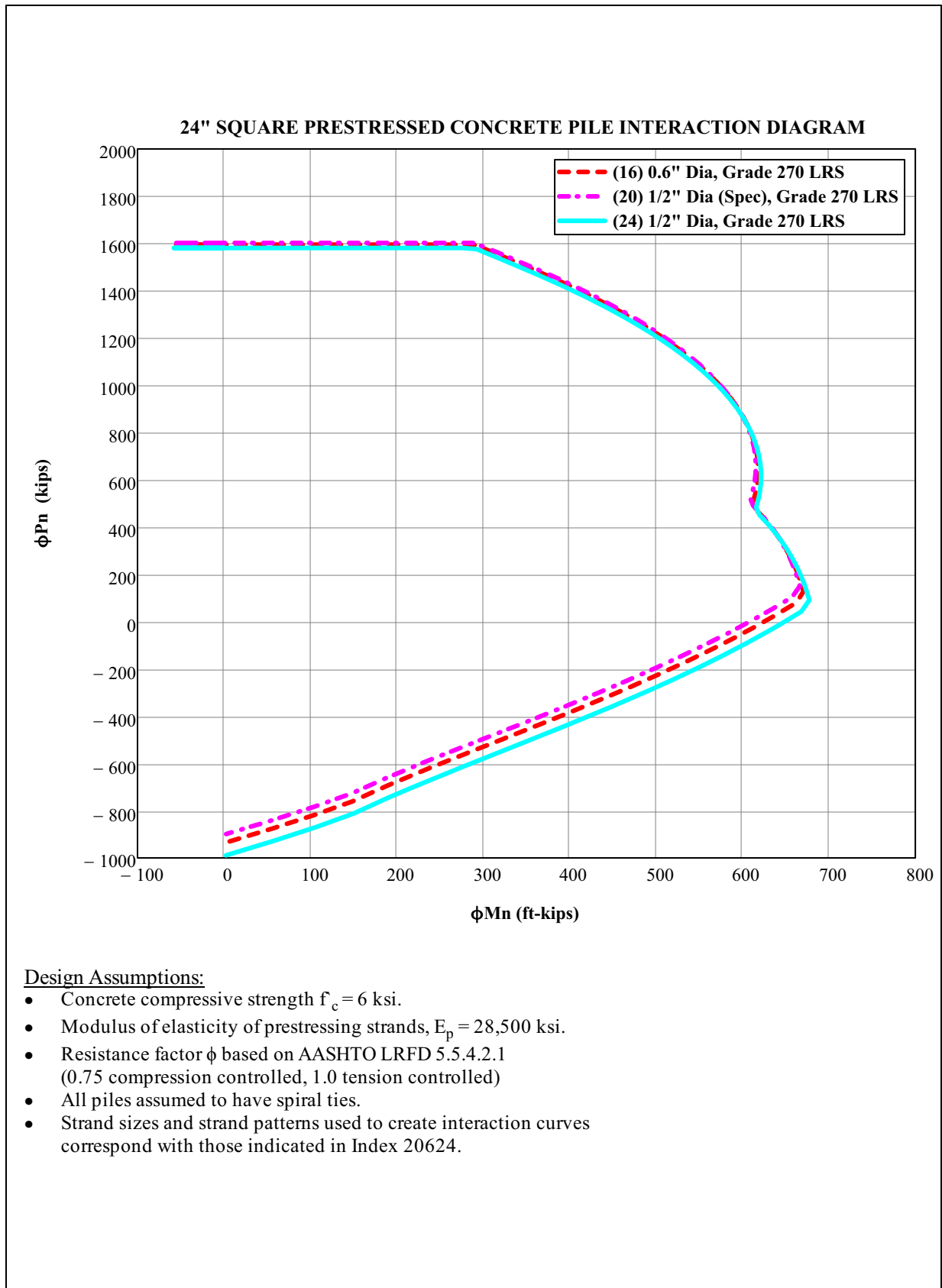


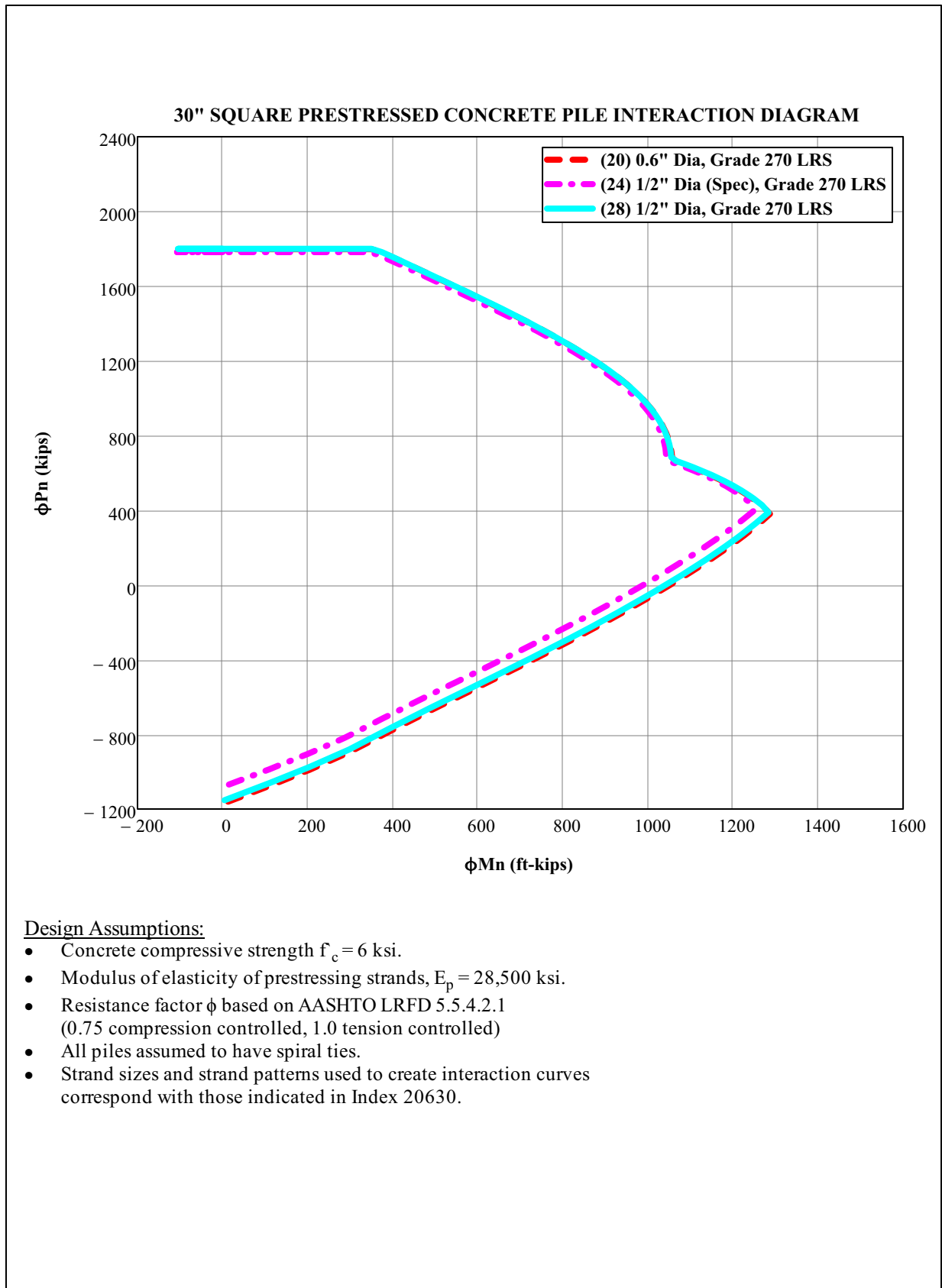


Design Assumptions:

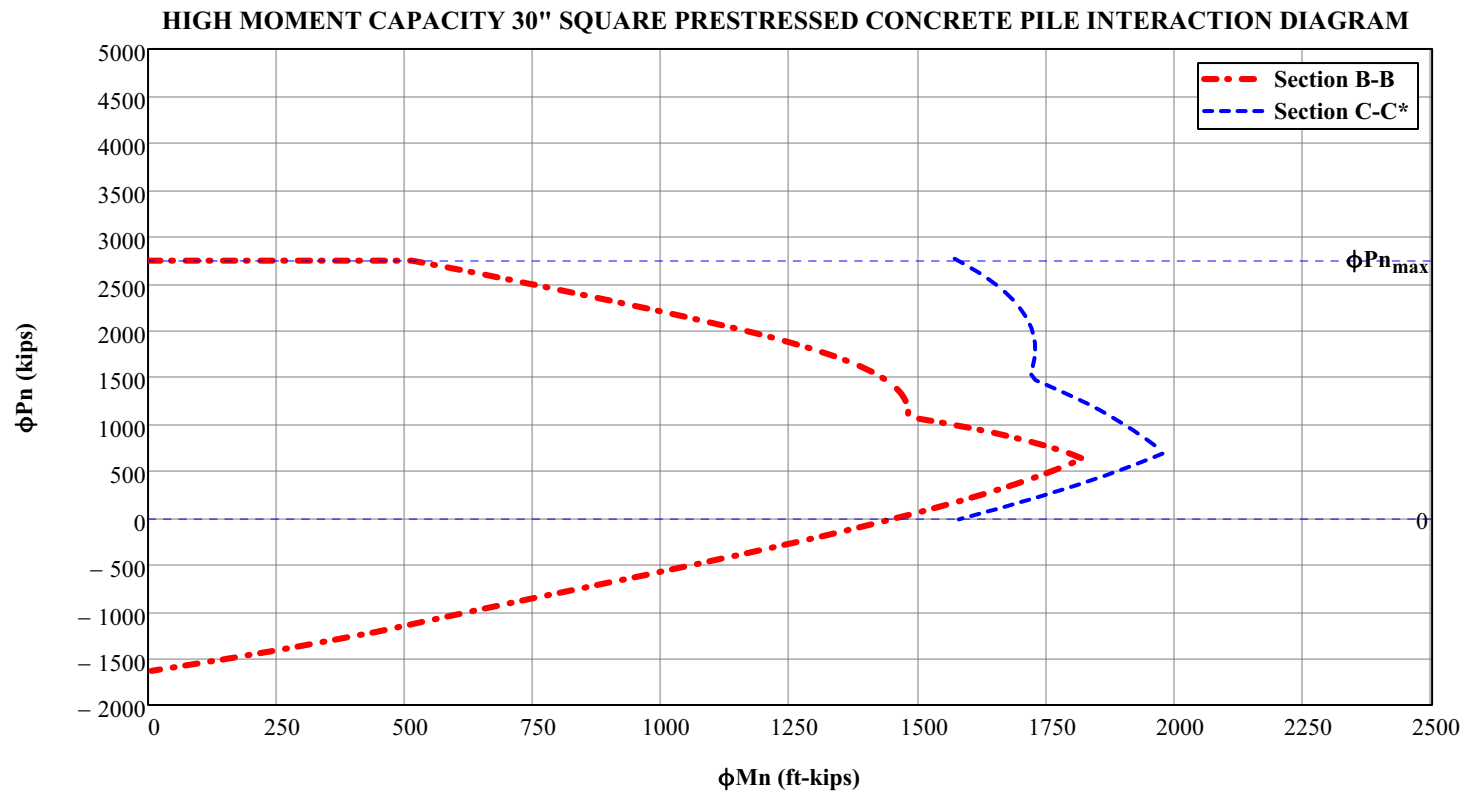
- Concrete compressive strength  $f_c = 6$  ksi.
- Modulus of elasticity of prestressing strands,  $E_p = 28,500$  ksi.
- Resistance factor  $\phi$  based on AASHTO LRFD 5.5.4.2.1 (0.75 compression controlled, 1.0 tension controlled)
- All piles assumed to have spiral ties.
- Strand sizes and strand patterns used to create interaction curves correspond with those indicated in Index 20618.











Design Assumptions:

- Concrete compressive strength  $f_c = 8.5$  ksi.
- Strand Pattern: (28) 0.6" Diameter, Grade 270 LRS.
- Modulus of elasticity of prestressing strands,  $E_p = 28,500$  ksi.
- Resistance factor  $\phi$  based on AASHTO LRFD 5.5.4.2.1 (0.75 compression controlled, 1.0 tension controlled)
- All piles assumed to have spiral ties.
- Refer to Design Standard Index 20631 for details of pile sections B-B and C-C.

\*The curve for Section C-C is limited by the axial capacity (tension and compression) of the voided section of the pile (Section B-B).