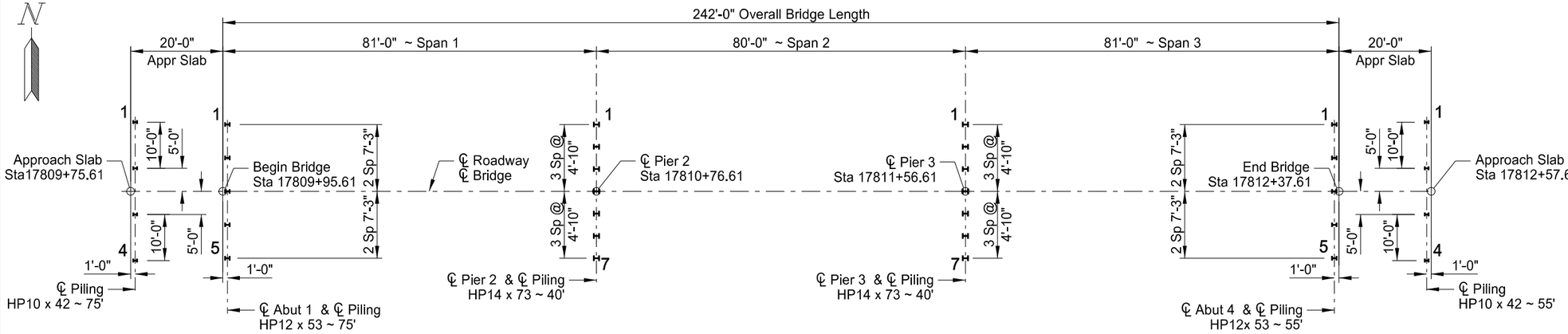
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRO-8-010(036)009	170	40



Drive the HP10 x 42 Pile to a bearing resistance of 105 tons.
Drive the HP12 x 53 Pile to a bearing resistance of 130 tons.
Drive the HP14 x 73 Pile to a bearing resistance of 180 tons.

PILING LAYOUT

* Do not drive abutment piling until all constructed embankment is in place.

NOTE:

For double acting or single acting diesel hammers, calculate the bearing resistance of piles by the following formula:

$$\Phi Rn = \frac{4.5E}{S + 0.2} \times \frac{W + 0.2M}{W + M}$$

Where:

ΦRn = Nominal pile bearing resistance, in pounds. The Φ factor is included in equation.
W = Weight of striking parts (ram), in pounds.
M = Weight of parts being driven, in pounds. Includes pile weight, anvil (if any), driving cap, etc.
E = Energy per blow, in foot-pounds.
S = Average penetration of pile in inches per blow for last ten blows.

For single acting hammers, calculate E by multiplying observed stroke (ft) and W (lbs).

	PILE COORDINATES		
	PILE	NORTHING	EASTING
WEST APPR SLAB	1	459,765.91	2,823,133.42
	4	459,735.95	2,823,134.94
ABUT 1	1	459,766.42	2,823,153.42
	5	459,737.46	2,823,154.88
PIER 2	1	459,770.46	2,823,233.32
	7	459,741.50	2,823,234.78
PIER 3	1	459,774.51	2,823,313.21
	7	459,745.54	2,823,314.68
ABUT 4	1	459,778.55	2,823,393.11
	5	459,749.59	2,823,394.58
EAST APPR SLAB	1	459,780.06	2,823,413.06
	4	459,750.10	2,823,414.58

Elevations shown are to top of finished concrete.
BEARING ELEVATIONS

This drawing is preliminary and not for construction or implementation purposes.

PRELIMINARY

MAPLE RIVER

PILING LAYOUT & BEARING DETAILS