

QUANTITIES FOR ONE 305mm PRESTRESSED PILE

| LENGTH<br>m | CONCRETE<br>m <sup>3</sup> | PILE WT.<br>kg | ONE POINT PICK-UP |          | TWO POINT PICK-UP |          |
|-------------|----------------------------|----------------|-------------------|----------|-------------------|----------|
|             |                            |                | 0.300L m          | 0.700L m | 0.207L m          | 0.586L m |
| 7.5         | 0.70                       | 1680           | 2.25              | 5.25     |                   |          |
| 9.0         | 0.84                       | 2020           | 2.70              | 6.30     |                   |          |
| 10.5        | 0.98                       | 2350           | 3.15              | 7.35     |                   |          |
| 12.0        | 1.12                       | 2690           | 3.60              | 8.40     |                   |          |
| 13.5        | 1.26                       | 3030           | 4.05              | 9.45     |                   |          |
| 15.0        | 1.40                       | 3360           | 4.50              | 10.50    |                   |          |
| 16.5        | 1.53                       | 3680           |                   |          | 3.42              | 9.67     |
| 18.0        | 1.67                       | 4010           |                   |          | 3.73              | 10.55    |
| 19.5        | 1.81                       | 4350           |                   |          | 4.04              | 11.43    |
| 21.0        | 1.95                       | 4690           |                   |          | 4.35              | 12.31    |
| 22.5        | 2.09                       | 5020           |                   |          | 4.66              | 13.19    |

**NOTES**

PRESTRESSED CONCRETE STRENGTH :  $f'c = 51.7 \text{ MPa}$   
 BUILD-UP CONCRETE STRENGTH :  $f'c = 51.7 \text{ MPa}$

STRAND DATA:

| SIZE<br>mm | GRADE    | AREA<br>mm <sup>2</sup> | ULTIMATE<br>STRENGTH   | APPLIED<br>PRESTRESS<br>FORCE |
|------------|----------|-------------------------|------------------------|-------------------------------|
| 12.70      | 270 L.R. | 98.71                   | 183.7 kN<br>PER STRAND | 137.8 kN<br>PER STRAND        |
| 15.24      | 270 L.R. | 140.0                   | 260.7 kN<br>PER STRAND | 195.4 kN<br>PER STRAND        |

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 12.70mm OR 15.24mm STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 27.6 MPa.

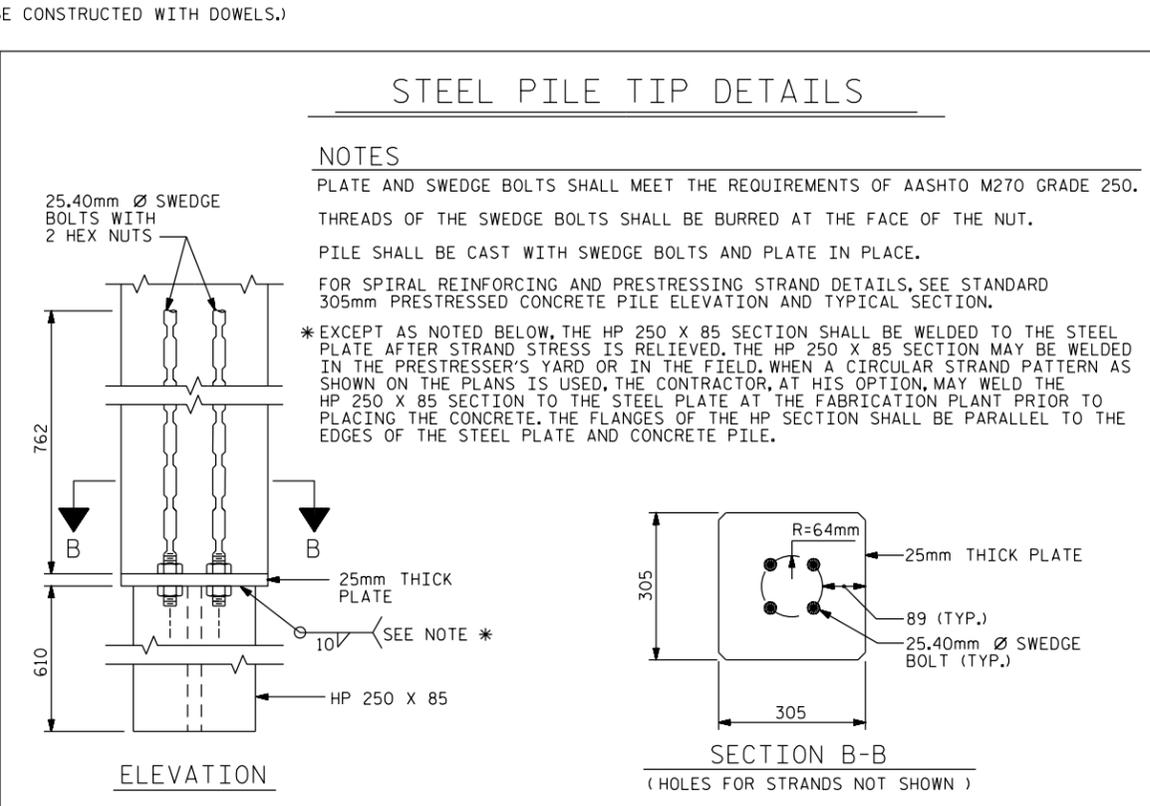
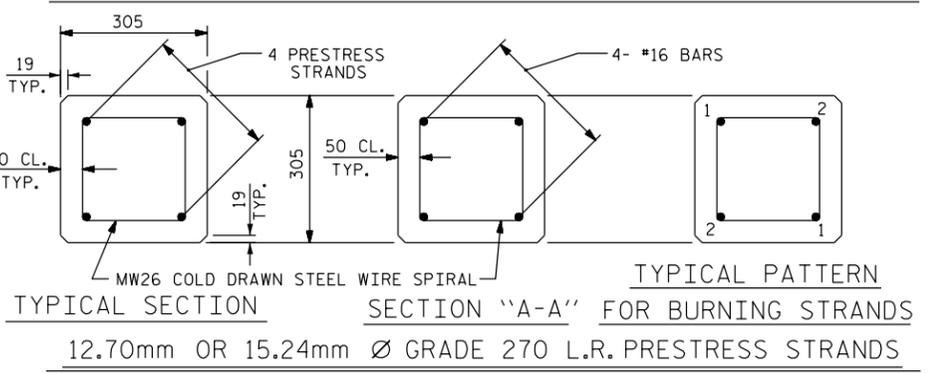
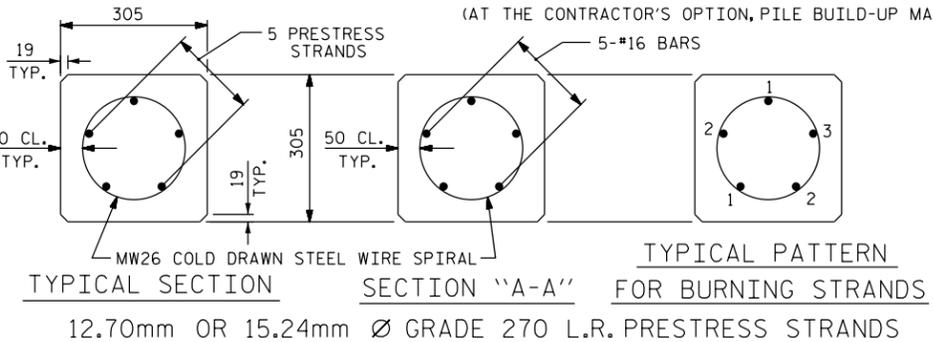
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 50mm WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 34.5 MPa AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.



**DOWEL INSTALLATION FOR OPTIONAL BUILD-UP**

GROUT COMPRESSIVE STRENGTH:  $f'c = 34.5 \text{ MPa}$

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 76mm OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 13mm CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE MW26 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. \_\_\_\_\_  
 \_\_\_\_\_ COUNTY  
 STATION: \_\_\_\_\_

ASSEMBLED BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 CHECKED BY : \_\_\_\_\_ DATE : \_\_\_\_\_  
 DRAWN BY : FCJ 7/88 REV. 8/16/99R RWW/LES  
 CHECKED BY : CRK 3/89 REV. 5/1/06 TLA/GM  
 WMC/GM

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 305mm PRESTRESSED  
 CONCRETE PILE

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |              |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       |              |