



NOTES:

1. GENERAL:
 - 1.1. THE DESIGN, FABRICATION AND INSTALLATION OF PILES SHALL BE GOVERNED BY THE FOLLOWING CODES, STANDARD AND REGULATIONS:
 - 1.1.1. CSA G40.21 STRUCTURAL QUALITY STEEL.
 - 1.1.2. 2012 ONTARIO BUILDING CODE.
 - 1.1.3. CSA W48-18 FILLER METALS AND ALLIED MATERIAL FOR METAL ARC WELDING.
 - 1.1.4. CSA W47.1 CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES.
 - 1.1.5. ASTM A252 WELDED AND SEAMLESS STEEL PIPE PILES.
 - 1.1.6. ASTM A53 WELDED AND SEAMLESS STEEL PIPE.
 - 1.1.7. PROVINCIAL HEALTH AND SAFETY REGULATIONS.
 - 1.2. PILE SHAFT DIAMETER, WALL THICKNESS AND HELIX PLATE THICKNESS SHALL NOT BE LESS THAN MINIMUM SPECIFIED IN PILE SCHEDULE.
2. MATERIALS:
 - 2.1. STEEL PIPE PILE MATERIALS SHALL CONFORM TO ASTM A500, GRADE B OR ASTM A252 (GRADE 3) MINIMUM.
 - 2.2. HELICES SHALL CONFORM TO CSA-G40.21, GRADE 300W.
 - 2.3. HELICES SHALL BE WELDED TO THE PIPE SECTION USING A CONTINUOUS FILLET WELD ON BOTH SIDES OF THE HELIX-PIPE CONNECTION. HELICES SHALL HAVE MINIMUM THICKNESS AS SPECIFIED.
 - 2.4. SACRIFICIAL STEEL THICKNESS HAS BEEN PROVIDED TO ACCOUNT FOR CORROSION, AS PER ONTARIO BUILDING CODE SECTION 4.2.3.10.
 - 2.5. ALL WELDS SHALL BE MIN. 6MM FILLET WELDS, UNLESS NOTED OTHERWISE.
 - 2.6. WELD TENSILE STRENGTH = 480MPA.
 - 2.7. WELDING ELECTRODES SHALL CONFORM TO CSA W48.1.
3. DESIGN:
 - 3.1. PILE CAPACITY GIVEN IN THIS SHEET SHOULD BE USED FOR THE PRELIMINARY GUIDE AND ESTIMATION ONLY.
 - 3.2. PILES MUST BE INSTALLED BY A PROFESSIONAL CONTRACTOR.
 - 3.3. PILES MUST HAVE SUFFICIENT EMBEDMENT DEPTH TO RESIST FROST ACTION.
4. CONSTRUCTION:
 - 4.1. PILES SHALL BE INSTALLED OPEN ENDED; AND ENDS SHALL BE CUT AT 45 DEGREES.
 - 4.2. PILES SHALL BE INSTALLED CONTINUOUSLY WITHOUT INTERRUPTION TO THE MINIMUM EMBEDMENT DEPTH AND MINIMUM INSTALLATION TORQUE INDICATED ON THE PILE SCHEDULE.
 - 4.3. PILE INSTALLATION RECORDS SHALL BE DOCUMENTED BY A QUALIFIED PILING INSPECTOR REPRESENTING THE GEOTECHNICAL ENGINEER.
 - 4.4. FABRICATION SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARD PRACTICES AND APPLICABLE CODES.
 - 4.5. PILE EMBEDMENT DEPTHS INDICATED IN THE PILE SCHEDULE ARE HELIX DEPTH FROM THE EXITING GRADE. STICKUP AND TIP PROJECTION LENGTHS SHALL BE ADDED TO THE PILE LENGTH, AS REQUIRED.
 - 4.6. INSTALL PILES VERTICALLY AND ENSURE THE RATE OF ADVANCEMENT INTO THE SOIL PER REVOLUTION IS EQUAL TO THE HELIX PITCH.
5. TOLERANCES:
 - 5.1. PILE SHALL BE INSTALLED TO THE FOLLOWING TOLERANCES:
 - 5.1.1. TOP OF PILE WITHIN 75MM OUT OF ALIGNMENT.
 - 5.1.2. NOT MORE THAN 2% INCLINATION FROM VERTICAL.
 - 5.2. ANY GAP AROUND INSTALLED PILE MUST BE BACKFILLED WITH CRUSHED STONES OR APPROVED EQUIVALENT.
 - 5.3. WHERE PILES DEVIATE FROM ABOVE TOLERANCE AND DESIGN REQUIREMENTS, THE CONDITION OF THE FOUNDATION SHALL BE ASSESSED BY THE ENGINEER AND WHERE REQUIRED, CORRECTIONS SHALL BE MADE.
6. ACCEPTANCE:
 - 6.1. BOTH MINIMUM TOP HELIX EMBEDMENT DEPTH AND MINIMUM INSTALLATION TORQUE MUST BE ACHIEVED FOR PILE ACCEPTANCE.

HELICAL PILE SCHEDULE (FOR PRELIMINARY GUIDE ONLY)¹

PILE TYPE	FACTORED ULTIMATE AXIAL CAPACITY KN (KIP) ²		AXIAL STRUCTURAL CAPACITY KN (KIP) ⁴	SHAFT SIZE MM (INCH)	HELIX SIZE MM (INCH)	TOP HELIX MIN. EMBEDMENT	MAX. TORQUE KN-M (FT-LBS)
	COMPRESSION	TENSION ³					
M1	50 (11)	35 (8)	220 (49)	60.3X4.76 (2 3/8 X 3/8)	203 X 9.53 (8 X 3/8)	SEE NOTE 5	5 (3,700)
M2	85 (19)	60 (13)	280 (63)	76.2X4.76 (3 X 3/8)	254 X 9.53 (10 X 3/8)	SEE NOTE 5	8.3 (6,200)
M3	130 (29)	90 (20)	430 (97)	88.9X6.35 (3.5 X 1/4)	305 X 9.53 (12 X 3/8)	SEE NOTE 5	14.8 (10,900)

- NOTES:
1. THIS SHEET MUST BE USED AS A PRELIMINARY GUIDE ONLY. ENGINEERED SHOP DRAWINGS SHOULD BE PREPARED BY A PROFESSIONAL ENGINEER FOR ANY PROJECT USING THESE MATERIALS.
 2. FACTORED ULTIMATE COMPRESSION CAPACITY INCLUDES RESISTANCE FACTOR OF 0.4. ACTUAL PILE CAPACITY MUST BE DETERMINED BY A PROFESSIONAL ENGINEER BASED ON SOIL CONDITIONS, FINAL EMBEDMENT DEPTH AND FINAL INSTALLATION TORQUE.
 3. TENSIONAL CAPACITY PROVIDED IN THIS TABLE SHOULD BE USED FOR PRELIMINARY ESTIMATION ONLY. FINAL TENSIONAL CAPACITY OF A PILE DEPENDS ON EMBEDMENT DEPTH AND SOIL CONDITIONS AND MUST BE DETERMINED BY A PROFESSIONAL ENGINEER.
 4. AXIAL STRUCTURAL CAPACITY INCLUDES A RESISTANCE FACTOR OF 0.85 AND DOES NOT INCLUDE STRENGTH REDUCTION FACTOR TO ACCOUNT FOR STEEL CORROSION.
 5. MINIMUM HELIX EMBEDMENT DEPTH SHOULD BE DETERMINED BASED ON THE FROST DEPTH. IF PILE IS SUBJECTED TO TENSIONAL LOAD, A HIGHER EMBEDMENT DEPTH MIGHT BE REQUIRED.

FOR INFORMATION ONLY



MASCORE INC.
BRANTFORD, ON

DRAWING TITLE

MASCORE HELICAL PILE
SPECIFICATIONS

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