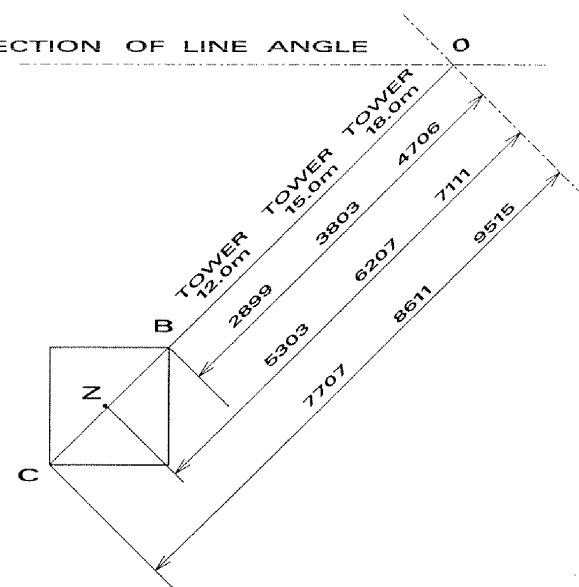


P E G G I N G

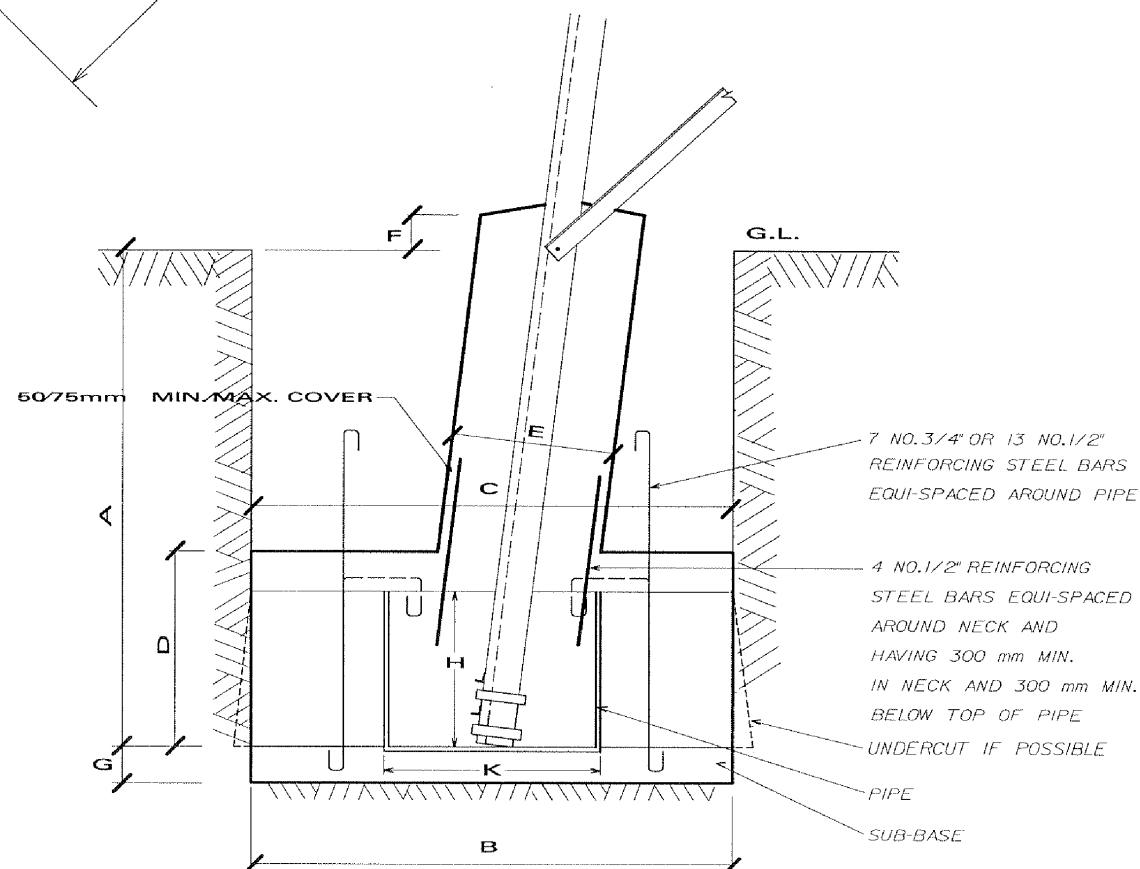
DIRECTION OF LINE ANGLE



TOWER 12.0m	TOWER 15.0m	TOWER 18.0m
OZ = 5303	OZ = 6207	OZ = 7111

## TEMPORARY STIFFENER DETAILS

TEMPORARY STIFFENER DETAILS				
HOLES C/C (mm)	12m	15m	18m	
	3180	3830	4477	



A	B <sup>*</sup>	C	D	E	F	G	H	K	VOL. CONC. /LEG
3.0	3.4	3.4	2.0	1.0	0.1	0.1	0.9	1.2	24cu/m

\* UNDERCUT ALSO IF POSSIBLE

### PLACING OF PIPED FOUNDATIONS (TYPE C) IN CLAY SOILS.

THERE ARE A LARGE NUMBER OF SITES WHERE THE BEARING CAPACITY OF THE SOIL IS EXCELLENT IN THE UNDISTURBED STATE BUT BECAUSE OF THE PRESENCE OF GROUND OR SURFACE WATER, IT HAS BEEN FOUND THAT THE SIDES OF THE EXCAVATION UNDERGO GRADUAL COLLAPSE IF THE HOLES ARE LEFT OPEN FOR THE LENGTHY PERIOD NECESSARY TO SET UP THE TOWER AND THAT UNDERCUTTING IS NOT POSSIBLE. IT HAS BEEN FOUND THAT THE USE OF PRE-CAST CONCRETE PIPES IS VERY USEFUL IN SUCH SITUATIONS AND ALLOWS THE UNDISTURBED STRENGTH OF THE SOIL IN UPLIFT TO BE DEVELOPED. THE TECHNIQUE TO BE USED IS AS FOLLOWS :

## STAGE 1

IT IS USUALLY OBVIOUS FROM GROUND CONDITIONS WHEN SITES REQUIRING THE USE OF CONCRETE PIPES CAN BE EXPECTED, E.G. WET RUSHY GROUND OR SURFACE WATER AT OR NEAR THE SITE. CONCRETE PIPES AND REINFORCING STEEL SHOULD BE PURCHASED AND BE QUICKLY AVAILABLE. THE MINIMUM PIPE SIZE FOR PRACTICAL REASONS SHOULD BE 4 FEET (1.2M) DIA. AND 3 FEET (0.9M) DEEP.

THE HOLES SHOULD BE OPENED ONE AT A TIME TO THE FULL UNDERCUT WIDTH AND DUG 0.1M DEEPER THAN NORMAL TO THE DIMENSIONS SHOWN IN TABLE A.

THE EXTRA 0.2M SHOULD THEN BE FILLED WITH A RICH CONCRETE MIX (5 PARTS AGGREGATE TO 1PART CEMENT, BY W). THE AMOUNT OF WATER TO BE ADDED TO THE MIX WILL DEPEND ON THE WATER INFLOW - IN CASES OF SEVERE INFLOW THE MIX COULD ALMOST DRY WITH THE REMAINING WATER COMING FROM THE GROUND WATER, WHICH SHOULD BE MINIMISED BY CONTINUOUS PUMPING. IN THE CASE OF FISSURED CLAY, WHICH IS USUALLY CHARACTERISED BY A SLOW WATER INFLOW BUT WITH LUMPS OF SOIL DROPPING FROM THE SIDES OF THE EXCAVATION, THE NORMAL AMOUNT OF WATER SHOULD BE ADDED TO THE CONCRETE. REINFORCING STEEL SHOULD BE PLACED IN THE SUB-BASE AS INDICATED ON THE DRAWING. THE NUMBERS OF THESE WILL DEPEND ON THE UPLIFT (SEE ACROSS). THESE BARS SHOULD BE SENT AS SHOWN ACROSS. THE SUB-BASE CONCRETE SHOULD THEN BE COMPACTED BY VIBRATION UNLESS CONTINUING COLLAPSE OF THE BANKS INDICATE THAT PIPES WILL BE REQUIRED.

## STAGE 2

IF THE BANKS CONTINUE TO COLLAPSE OR SHOWN SIGNS OF COLLAPSE (SUCH AS FISSURES IN THE CLAY), THE HOLE SHOULD BE CLEANED OUT AND WIDENED TO ALLOW FOR THE PLACING OF THE PIPE AND TO IMPROVE THE BEARING CAPACITY AND UPLIFT CAPACITY OF THE FOUNDATION. AS A GUIDE TO THE MINIMUM SIZE OF FOUNDATION, THE BEARING CAPACITY SHOULD BE REDUCED TO 1 TON PER SQ.FT. (10.937 KGS/M SQ.) (SEE MAXIMUM COMPRESSION PER LEG ACROSS). THE PIPE SHOULD THEN BE PLACED IN THE CORRECT POSITION USING THE MAST PEGS AND SET APPROXIMATELY 0.1M INTO THE SUB-BASE, REINFORCING STEEL PLACED AND NORMAL CONCRETE POURED AND VIBRATED IMMEDIATELY BETWEEN THE PIPE AND THE UNDISTURBED BANK. LARGE LUMPS OF SOIL SHOULD BE REMOVED JUST BEFORE THE CONCRETE IS PLACED. THE CONCRETE SHOULD BE BROUGHT UP TO THE LEVEL OF THE TOP OF THE PIPE.

THIS PROCEDURE SHOULD BE REPEATED FOR THE OTHER THREE HOLES UNTIL ALL ARE IN A STABLE CONDITION. THE MAST BASE SHOULD THEN BE SET-UP AND LEVELLED ACCORDING TO THE NORMAL PROCEDURE, THE PIPES CLEANED INTERNALLY AND THE REINFORCING STEEL BENT DOWNWARDS INTO PIPE. THE REMAINDER OF THE BASE BLOCK SHOULD THEN BE CONCRETED INCREASING THE BLOCK THICKNESS BY THE USUAL RULE (HALF THE INCREASED BASE WIDTH) AND ENSURING THAT REINFORCING STEEL HAS AN ADEQUATE COVER OF CONCRETE, I.E. 2 INCHES OR 50MM. THE NORMAL NECK SHOULD THEN BE POURED AND FINISHED AS FOR NORMAL FOUNDATION. IF THERE IS ANY DELAY IN POURING THE NECKS REINFORCING STEEL SHOULD BE USED TO ENSURE THAT THE NECK AND BLOCK ACT AS A MONOLITHIC UNIT TO ENSURE THAT THE HORIZONTAL SHEAR FORCES ARE TRANSFERRED INTO THE MAIN BLOCK. THIS REINFORCING STEEL SHOULD BE EQUALLY PLACED AROUND THE PERIPHERY OF THE NECK BUT MAINTAINING THE REQUIRED DEPTH OF COVER, I.E. 2 INCHES OR 50MM. EVERY CARE SHOULD BE TAKEN WHEN PLACING THE NECK TO ENSURE A GOOD BOND BETWEEN THE BLOCK AND THE NECK BY REMOVING THE WATER AND WIRE BRUSHING THE SURFACE OF THE BLOCK CONCRETE IN CONTACT WITH THE NECK. IF THE SIDES OF THE EXCAVATION ARE GENERALLY UNSTABLE, SHEET PILING SHUTTERING SHOULD BE USED AND A TYPE D FOUNDATION INSTALLED. ESBI SHOULD BE CONSULTED IN ADVANCE IF FOUNDATION TYPES OTHER THAN B OR C ARE USED. COMPLETE DETAILS OF ALL FOUNDATIONS USED SHOULD BE RECORDED AND FORWARDED TO ESBI AT WEEKLY INTERVALS.

## NOTES

1. CONCRETE TO BE IN ACCORDANCE WITH E.S.B.I.  
SPECIFICATION NO. PG404-S27 UNLESS OTHERWISE SPECIFIED  
AND SHOULD HAVE A MINIMUM CEMENT CONTENT OF 300KG/M SQ.

2. SEE ALSO CDL.IIFOR SHORING REQUIREMENTS WHEN EXCAVATING FOUNDATIONS.

3. THIS FOUNDATION CAN ALSO BE USED FOR LOOSE, DRY, GRANULAR MATERIAL IN UNDISTURBED STATE.

## OTHER RELEVANT DRAWINGS

TOWER PEGGING	INCL.
TOWER DETAILS	NO. TCO000
FORMER	
TEMPORARY STIFFENERS	12.0m TOWER : 3180 15.0m TOWER : 3830 18.0m TOWER : 4477
TYPE B FOUNDATION (NORMAL)	NO. TCI5733

MAX. UPLIFT / LEG = 96,639 kgs.

$$\text{MAX.COMPRESSION / LEG} = 113.472 \text{ kgs.}$$

SHEAR / LEG = 4347 kgs. TRANSV./ 3762 kgs. LONGITUD.

0	27.07.20	ISSUED FOR SUBSTITUTE CONSENT			SB	SB	CM HOK
Rev	Date	Revision description			Drm	Prod	Ver And

Purpose of issue - Preliminary unless indicated

Client Approval ☐ Planning ☒ Tender ☐ Construction ☐ As-Built ☐



## Energy for generations

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Engineering and Major Projects is a division of ESB.

Client **Gort Windfarms Ltd.**

Project	Derrybrien Wind Farm Project
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### Contract

Drawing title

**Foundation details for  
Type 61 steel tower  
Foundation type 'C'**

Production unit  
Civil & Environmental Engineering

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Drawn <b>S. Bolton</b>	Produced <b>S. Bolton</b>	Verified <b>C.Moran</b>	Approved <b>H.O'Keeffe</b>	Approval date <b>27.07.2020</b>
Client ref.		No. of sheets <b>1</b>	Size <b>A3</b>	Scale <b>n.t.s.</b>

<b>Drawing number</b> <div style="font-size: 1.2em; font-weight: bold; margin-top: 10px;">QS-000280-01-D460-023-011-000</div>	<b>SHEET</b>	<b>REV</b>
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