



Request for Proposals (RFP)

Goldboro & Melford

AOC15/50

Turbine Decommissioning

INTRODUCTION

The Municipality of the District of Guysborough (MODG) is one of three municipal units in Guysborough County, Nova Scotia. The Municipality completely surrounds the Town of Mulgrave and borders the St. Mary's municipal district to the West, Antigonish County to the North and the Strait of Canso to the East. MODG was incorporated in 1879 and covers an area of 2,116 square kilometers.

OBJECTIVE

The purpose of this Request for Proposals (RFP) is to solicit interest in the decommissioning of five AOC15/50 (50 kW) wind turbines that were originally constructed under the Nova Scotia ComFIT program in Goldboro (3 turbines) and Melford (2 turbines).

This is a request for proposals and not a tender call. By submitting a response to this RFP, the proponent acknowledges that no contractual relationship has been created between the proponent and MODG or any of its elected officials, officers, employees, or agents. The MODG, its elected officials, officers, employees and agents owe no duty of any kind to any proponent upon the submission of a proposal.

The proponent agrees that, by submitting a proposal in response to this RFP, the proponent may not make any claim for any damages against the MODG, its elected officials, officers, employees or agents.

SCOPE AND DELIVERABLES

Proponents shall submit a proposal addressing all aspects of decommissioning five (5) AOC 15/50 (50 kW) wind turbines, including proper disposal, recycling and site reclamation including the disassembly of one (1) of the two (2) turbines at the Melford location to be delivered to the NSCC Strait Area Campus to support the new Wind Turbine Technician program.

General Provisions

- The Proponent shall conduct, with the prior approval of MODG, the necessary site inspections at both Goldboro and Melford locations to familiarize themselves with the location and site conditions.
- The Proponent shall obtain all necessary permits required to perform all aspects of this work.
- Work includes decommissioning and removal of all turbines, structures and associated components, including turbine foundations.
- Perform work in accordance with all applicable Federal, Provincial, and Municipal regulations and standards.

- The successful Proponent shall provide proof of insurance, and contract and performance security, acceptable to MODG.
- Completion deadline: **June 30, 2026**.

Wind Turbine Specifications

- Five AOC 15/50 (50 kW) wind turbines
- 120' Standard 3-Leg Lattice Tower
- 23.7' GRE Composite Blades
- See Appendix A for more detailed specifications

Site Work & Wind Turbine Decommissioning Requirements

2.1 Wind Turbine Decommissioning and Disassembly

- Decommissioning/disassembly of three (3) AOC15/50 (50 kW) Wind Turbines at Goldboro, NS, PID 35179464, 299 Sable Road, Goldboro.
- Decommissioning/disassembly of two (2) AOC15/50 (50 kW) Wind Turbines at Melford, NS, PID 35016476, 5841 Highway 344, Middle Melford.
- Removal of all materials associated with decommissioning from sites.
- Delivery of one (1) complete Turbine and one electrical control shed from the Melford Site to NSCC Strait Area Campus for use in their Wind Turbine Technician Program, delivery to be coordinated with NSCC.
- Complete survey of the four (4) corners of each concrete turbine base prior to decommissioning and provide survey plans to MODG.
- Removal of all turbine foundations/concrete bases to two (2) feet below grade and backfill to match elevation of surrounding grade.
- Removal of electrical control sheds.
- Removal of all spare parts including, but not limited to, turbine blades, electrical components, etc.

2.2 Site Work

- Work carried out as part of the Contract shall not negatively impact watercourses on or adjacent to the property or neighboring properties.
- Work shall not in any manner decrease the effectiveness of the condition of surface water drainage at the site from the conditions existing prior to the commencement of site work.
- Backfill all excavations created during the work to surrounding grade. Fill may be acquired on site in areas approved by the Municipality.
- Clean concrete may be utilized for infill of the turbine foundations, final landscaping, and/or drainage enhancement of the site. Clean concrete debris that is used for this purpose must be broken into pieces with dimensions no greater than 150mm.

2.3 Salvageable Materials

- Proponents who wish to reuse materials or equipment must provide detailed explanation to MODG as part of their submission and provide an estimated loss in scrap metal proceeds associated with the scope.
- Reused or salvaged metal materials shall be credited to MODG at 50% of estimated scrap metal costs.
- Salvage, recycling, or reuse of materials or equipment where applicable resulting from this work is required.
- Scrap metal proceeds shall be credited back to MODG or carried in the price as a credit.
- The contractor shall protect MODG from any claims, however arising, from the salvage, recycling or reuse of materials or equipment as part of this project.
- Waste materials must be disposed of at the Guysborough Municipal Waste Management Facility, if applicable.

MODG Evaluation Criteria:

The MODG shall evaluate proposals and may select the proposal most attractive to MODG and which, in its sole and absolute discretion, is deemed to be in the best interest of MODG.

Without limiting the meaning of the terms “most attractive” and “the best interest of MODG”, MODG may use the following criteria to evaluate proposals:

- Evidence indicating that the Proponent is an experienced, independent, qualified contractor in wind turbine decommissioning.
- The list of proposed equipment provided by the Proponent.
- The level of detail provided by the Proponent; and more specifically, the submission of a comprehensive proposal.
- The proposed time frame for the project.
- Financial proposal provided by the Proponent.

Pricing Submission:

1. All-inclusive cost decommissioning, trucking, \$_____ +HST
disassembly and site work
 2. Estimated Credit for scrap metal proceeds or credit \$_____ +HST
for reused/salvaged metal material (50% of scrap value)
- Total Bid (1-2): \$_____ +HST

The MODG reserves the right to clarify any portion of a proposal and to negotiate with one or more Proponents during the evaluation process regarding any aspect of a proposal.

Submission Requirements:

- Proof of insurance coverage for Proponent required.
- The Proponent must provide details of contractors selected to work on this project. Local contractors and suppliers are preferred where possible.
- All contractors working on the job site must have Nova Scotia safety certification and provide Clearance Letters from the Workers' Compensation Board, together with a copy of these contractors' safety policies.
- List of equipment proposed for use on this project.

TERMS AND CONDITIONS

- Proponents shall be solely and fully responsible for all costs associated with the development, preparation, transmittal and submission of any proposal or material submitted in response to this RFP. MODG assumes no contractual or other obligations as a result of the issuance of this RFP, the preparation or submission of a proposal by a Proponent, the evaluation of proposals, the Proponent's conduct of presentations or the selection of any Proponent for further negotiations. By submitting a proposal, a Proponent agrees that it shall have no claim whatsoever for reimbursement from MODG for any such costs. All costs incurred by the Proponent during the selection process and during negotiations will be the responsibility of the Proponent.
- MODG reserves the right to cancel or reissue the RFP, at its sole discretion, at any time. In the event of any such cancellation, MODG will not be responsible for any costs, damages or claims of any kind to any Proponent or potential Proponent. Should MODG not receive any proposal that it, in its sole and absolute discretion, deems satisfactory, it shall have the right to cancel the RFP, invite proposals from any party, or negotiate an agreement with anyone whomsoever, including any Proponent.
- Submission of a proposal shall not obligate, nor should it be construed as obligating MODG to accept any such proposal or to proceed further with the project for which proposals are invited. MODG may, in its sole discretion, elect not to proceed with the project, and may elect not to accept any or all proposals for any reason.
- At all times, the Proponent has the responsibility to notify MODG, in writing, of any ambiguity, divergence, error, omission, oversight or contradiction contained within the proposal as it is discovered.
- Proponents may amend or withdraw their proposals prior to the closing date and time specified in the RFP by way of written or faxed notice to the MODG contact person. After the closing date and time, proposals may not be withdrawn.
- The Proponent must identify any information in its proposal that it considers to be confidential or proprietary.

- There will not be a public opening of proposals. All proposals and accompanying documentation received under this competition will become the property of MODG and will not be returned.
- MODG reserves the right to accept or reject, in whole or in part, any or all proposals.
- Prices quoted are to be held firm and shall remain in effect through the duration of an agreement, and for a minimum of 24 months.
- Scrap metal shall be returned for refund within three (3) days of decommissioning, rates will be credited to MODG as set by Dartmouth Metals or Stewart's Bill Scrap Metal on day of return.
- The successful Proponent's proposal shall form part of the contractual agreement by attachment and will be incorporated by reference. Representations made in the proposal shall constitute contractual warranties. Any provision in the proposal may be included in the contractual agreement as a direct provision thereof.
- The successful Proponent shall obtain and maintain all professional certifications and licenses necessary to lawfully provide the services required under this request for proposals.

INFORMAL OR UNBALANCED PROPOSALS

Proposals which, in the opinion of MODG, are incomplete, unconditional, illegible or obscure, or contain reservations, erasures, alterations or irregularities of any kind, may be rejected.

Proposals that contain prices which, in the opinion of MODG, appear to be unbalanced or likely to affect adversely the interests of MODG may be rejected.

CONFLICT OF INTEREST

Proponents must disclose to MODG in their proposal any potential conflict of interest, including any which may involve MODG employees, Council members or members or employees of agencies, boards, or commissions who may have a financial interest in the Proponent's firm. If such conflict of interest does exist MODG may, at its discretion, refuse to consider the Proposal.

INDEMNIFICATION

In the event an agreement is concluded with the successful Proponent, the successful Proponent shall agree to indemnify and save harmless MODG, its elected officials, officers, employees, servants, agents and others for whom MODG is in law responsible, from and against any liability, claims, demands, and any other actions or causes of action, suits, or

claims arising from or in any way connected to this Request for Proposals, any agreement concluded between MODG and the successful Proponent, or any act or omission of the successful Proponent, or anyone else for whom the successful Proponent is in law responsible.

In the event an agreement is concluded with the successful Proponent, the successful Proponent shall also agree to indemnify and save harmless MODG from all loss, damages, fines, penalties, costs, and expenses whatsoever (including consulting fees), investigatory and legal expenses arising from or in any way connected to any act or omission of the successful Proponent or anyone else for whom the successful Proponent is in law responsible.

CONTRACT NEGOTIATION

The MODG may negotiate a contractual agreement with the successful Proponent. If MODG is unable to negotiate an acceptable contractual agreement with the successful Proponent, then any Proponent may be selected, and a contractual agreement may be developed. The MODG, at any time and without liability, may withdraw from negotiations with any Proponent.

SUBMISSION DEADLINE

Questions related to this proposal shall be submitted in writing by **September 24, 2025** at 2:00 pm to Mr. Sean O'Connor, Director of Economic & Community Development, Municipality of the District of Guysborough, 33 Pleasant Street, PO Box 79, Guysborough, NS B0H 1N0 or submitted electronically to soconnor@modg.ca.

MODG will receive proposals from qualified contractors until **October 3, 2025** at 2:00 pm. Proposals shall be addressed to Mr. Sean O'Connor, Director of Economic & Community Development, Municipality of the District of Guysborough, 33 Pleasant Street, PO Box 79, Guysborough, NS B0H 1N0 or submitted electronically to soconnor@modg.ca.

APPENDIX A

INSTALLATION DRAWINGS

CUSTOMER:
Seaforth Energy Inc

DRAWING INDEX

No.	DESCRIPTION	DRAWING NO.	REV.
1	GENERAL NOTES	12-0494-N01-01	0
2	TOWER PROFILE	12-0494-E01-01	0
3	FOUNDATION TEMPLATE	21TM0009-E01-01	0
4	REBAR LIST	12-0494-F01-01	0
5	TOWER FOUNDATION	12-0494-F02-01	0
6	TOWER GROUNDING-EARTH & ROCK	12-0494-F03-01	0
7	BASE SECTION	21BS0008-E03-01	0
8	SECTION ASSEMBLY	21SA0008-E03-01	0
9	SECTION ASSEMBLY	21SA0008-E04-01	1
10	SECTION ASSEMBLY	21SA0129-E01-01	1
11	SECTION ASSEMBLY	12-0494-E02-01	0
12	SECTION ASSEMBLY	12-0494-E03-01	1
13	WORK PLATFORM - INSTALLATION	12-0494-E04-01	0
14	WORK PLATFORM - ISTALLATION	12-0494-E05-01	0
15	SAFETY CLIMB	12-0504-E04-01	0

[illegible]

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
INSTALLATION DRAWING INDEX			
DATE	DWG. BY	PROJECT NO.	REV.
SEP. 26.12	MHD	12-0494	0
ENG'D BY:	CHK'D BY:	DWG. NO.	
NRR	SPG	12-0494-XE01-01R00	

GENERAL

- THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS AND/OR THE GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.
- THE STRUCTURE IS DESIGNED TO BE STABLE AFTER THE CONSTRUCTION IS FULLY COMPLETED. ALL ERECTION MEANS AND METHODS ARE PROVIDED BY CONTRACTORS/OTHERS IN ORDER TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS PARTS DURING ERECTION.
- ALL CONSTRUCTION SHALL FULLY COMPLY WITH THE APPLICABLE PROVISIONS OF CANADA LABOUR CODE AND ALL GOVERNING LOCAL CODES, LATEST EDITION, AND ALL REQUIREMENTS SPECIFIED IN THE CODES SHALL BE ADHERED TO AS IF THEY WERE CALLED FOR OR SHOWN ON THE DRAWINGS.
- WHERE STANDARDS ARE IDENTIFIED WITHOUT A RELEASE DATE IN THESE GENERAL NOTES, THE MOST RECENT VERSION SHALL APPLY.
- ISSUES RELATED TO CONSTRUCTABILITY OF THE ENGINEERING DESIGN SHALL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTORS WHO HAVE FIRST-HAND KNOWLEDGE OF THE SITE. WHERE CONSTRUCTABILITY ISSUES ARISE, THEY CAN BE COMMUNICATED TO THE DESIGN ENGINEER WHO CAN THEN DECIDE, WITH ALLOWANCE FOR A REASONABLE AMOUNT OF TIME, ON APPROPRIATE COURSES OF ACTIONS.

DESIGN LOADS

STRUCTURE HAS BEEN DESIGNED IN CONFORMANCE WITH CSA-S37-01
BASIC WIND PRESSURE: **850** Pa (SITE SPECIFIC)
RADIAL ICE: **50** mm

FOUNDATIONS

- FOUNDATIONS HAVE BEEN DESIGNED BASED ON SOIL REPORT BY **LVM/MARITIME TESTING LIMITED (LVM-MTL)** FILE No. **15044**, DATED **JULY 16,2012**.
- REFER TO THE SOIL REPORT FOR RECOMMENDED BACKFILL/COMPACTED FILL PROCEDURES. IF SUCH INFORMATION IS NOT AVAILABLE, BACKFILL MATERIAL SHALL HAVE A MIN. DRY DENSITY OF **21.0** kN/cu.m AND ANGLE OF INTERNAL FRICTION OF **34°**. BACKFILL SHOULD PREFERABLY CONSIST OF GRANULAR MATERIAL. BACK FILL SHALL BE PLACED IN 200mm HORIZONTAL LIFTS AND COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR DENSITY. THE FILL MATERIAL SHALL BE FREE OF LARGE ROCKS, WASTE, DEBRIS AND FROZEN MATERIAL AND SHALL BE PLACED AT OR NEAR THE OPTIMUM MOISTURE CONTENT.
- WHERE SITE CONDITIONS DIFFER FROM THESE DRAWINGS, CONSULT THE ENGINEER OF RECORD.
- INSPECT THE FOUNDATION INSTALLATION TO ENSURE COMPLIANCE WITH THE PLANS.
- CHECK AREA FOR LOCATION OF UNDERGROUND PIPES, CABLES, CONDUIT, AND ETC. PRIOR TO EXCAVATION.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND SAFETY REGULATIONS REQUIREMENTS. PROCEDURES FOR PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO START OF FOUNDATION WORK.
- BRACING SHORING AND SLOPING EXCAVATION SHALL BE DONE IN ACCORDANCE WITH ALL LOCAL AND FEDERAL CODES AND SAFETY REGULATIONS. REFER TO SOIL REPORT FOR EXCAVATION/DRILLING CONDITIONS.
- WELDING OF REINFORCING STEEL AND EMBEDMENTS IS PROHIBITED UNLESS OTHERWISE NOTED ON DRAWINGS.
- MINIMUM CONCRETE COVER OVER MAIN REINFORCEMENT STEEL SHALL BE 75mm OR IN CONFORMITY TO CSA A23.1 AND/OR MINIMUM APPLICABLE BUILDING CODE REQUIREMENTS.
- SPACING DEVICES SHALL BE USED AS REQUIRED TO MAINTAIN THE SIDE CLEARANCE BETWEEN THE STEEL REINFORCEMENT AND EXCAVATION WALL.
- CONCRETE SHALL BE PLACED INTO EXCAVATION WITHOUT UNDUE DELAY AND WITH THE USE OF A CHUTE OR HOPPER DEVICE TO DIRECT THE CONCRETE TO FALL WITHIN THE CENTER OF THE STEEL CAGE. CONCRETE SHALL NOT BE ALLOWED TO HIT THE STEEL CAGE WHICH WOULD CAUSE SEGREGATION OF THE MATERIAL.

CAST-IN-PLACE CONCRETE

- CONCRETE MATERIAL AND METHODS OF CONSTRUCTION SHALL CONFORM TO REQUIREMENTS OF CSA A23.1. TESTING METHODS SHALL CONFORM TO CSA A23.2. ALL CONCRETE SHALL HAVE A MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH OF **35 MPa**. CONCRETE SLUMP SHALL BE 80mm +/- 20mm. AIR ENTRAINMENT OF 5 TO 8%, MAX. SIZES OF COARSE AGGREGATE 20mm.
- ALL REINFORCING STEEL BARS SHALL CONFORM TO CSA G30.18, AND HAVE YIELD STRENGTH OF **400 MPa**. UNLESS NOTED OTHERWISE.
- SULPHATE RESISTANCE CEMENT SHALL BE USED FOR ALL FOUNDATION CONCRETE IN CONTACT WITH SOIL SUSCEPTIBLE TO SULPHATE ATTACK. CONCRETE SHALL BE MANUFACTURED IN ACCORDANCE WITH CURRENT CSA STANDARD.
- CAST-IN-PLACE CONCRETE SHALL BE OF ONE CONTINUOUS AND MONOLITHIC POUR. CONSTRUCTION JOINTS ARE NOT PERMITTED UNLESS SPECIFICALLY APPROVED BY THE DESIGN ENGINEER.

STRUCTURAL STEEL

- ALL STEEL FABRICATION AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE CSA STANDARDS S37, AND S16
- ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CSA STANDARDS W59. ALL WELDING TO BE COMPLETED IN A CWB REGISTERED SHOP.
- BASE MATERIAL SHALL BE CORRECTLY PREHEATED BEFORE WELDING AND POST HEATED AFTER WELDING IN ACCORDANCE WITH THE ENGINEER APPROVED WELDING PROCEDURE.
- ALL STEEL ANGLES, PLATES AND MISCELLANEOUS MEMBERS SHALL CONFORM TO CSA G40.20/G40.21 STRUCTURAL GRADE 300W. TOWER LEGS AND HSS MEMBERS SHALL CONFORM TO CAN/CSA G40.20/G40.21 STRUCTURAL GRADE 350W UNLESS NOTED OTHERWISE.
- ANGLES LESS THAN 76mm 300W. ANGLES GREATER THAN 89mm 350W. ALL SPLICE PLATES 350W. ANY OTHER MATERIAL 300W UNLESS NOTED OTHERWISE.
- THE FINISHED DIAMETER OF BOLT HOLES SHALL NOT BE MORE THAN 2mm LARGER THAN THE NOMINAL BOLT DIAMETER UNLESS OTHERWISE NOTED.
- MATERIAL MAY BE CUT BY SHEARING, SAWING, OR GAS CUT. MATERIAL GREATER THAN 30mm THICKNESS SHALL NOT BE SHEARED.
- CUT EDGES SHALL BE TRUE AND SMOOTH, AND FREE FROM EXCESSIVE BURRS AND RAGGED BREAKS. SHEARED EDGES OF THICK PLATES SHALL BE PLANED TO A DEPTH OF 6mm. RE-ENTRANT CUTS SHALL BE AVOIDED.
- TOLERANCES AS INDICATED IN THE CSA STANDARD S16 SHALL APPLY DURING FABRICATION.
- PRIOR TO GALVANIZING ALL FABRICATED STEEL SHALL BE THOROUGHLY SHOP INSPECTED AND QUANTITIES COUNTED ACCORDING TO COMPANY APPROVED QUALITY CONTROL INSPECTION METHODS.
- ALL BOLTS, WASHERS AND NUTS SHALL CONFORM TO ASTM A325 TYPE X, UNLESS NOTED OTHERWISE. WASHERS SHALL BE PLACED ON THE A325 BOLT HEAD SIDE OR NUT SIDE WHICHEVER IS TO BE TURNED.

- WITH THE EXCEPTION OF FOUNDATION ANCHOR BOLTS WHICH ARE REQUIRED TO BE "SNUG-TIGHT", ALL BOLTS SHALL BE TIGHTENED USING THE TURN-OF-THE-NUT METHOD AS DESCRIBED IN CSA STANDARDS S16 UNLESS NOTED OTHERWISE.
- ALL EXPOSED STEEL AND HARDWARE SHALL BE HOT-DIPPED GALVANIZED PER CSA STANDARDS G164, AFTER FABRICATION UNLESS NOTED OTHERWISE.

GUY WIRES

- ALL GUY WIRES SHALL BE EXTRA-HIGH STRENGTH STRAND, LEFT-HAND LAY CABLES AS DESIGNATED ON PLANS WITH FINISH MEETING ASTM A-586 SPECIFICATIONS. GUY ASSEMBLIES SHALL BE OF 100% OF GUY STRENGTH UNLESS OTHERWISE NOTED. NON-METALLIC GUY WIRES SHALL BE PHILLYSTRAN.
- GUY FITTINGS BREAKING STRENGTH SHALL EQUAL THE BREAKING STRENGTH OF THE EXTRA-HIGH STRENGTH STRAND. ALL GUY FITTINGS SHALL BE GALVANIZED PER ASTM A123.
- GROUNDING ON THE GUYS AT ANCHORS SHALL MEET MINIMUM CSA-S37-01 REQUIREMENTS.

FIELD ERECTION

- THE CREW SHOULD COMPLY WITH ALL INSTALLATION PROCEDURES, SAFEGUARDS AND MEANS AND METHODS OF CONSTRUCTION. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENT OF OHSА AND CANADA LABOR CODE, PART II.
- ERECTION METHODS AND TOLERANCES SHALL COMPLY WITH CSA STANDARD S37. RECOMMENDED WEATHER CONDITIONS THAT SHOULD BE OBSERVED TO ENSURE A SAFE WORKING CONDITION SHALL BE: WIND SPEED NOT TO EXCEED 30KM/H, AND NO THUNDERSTORMS FORECASTED.
- ALL PRECAUTIONS AND EFFORTS SHALL BE TAKEN TO ENSURE THE TOWER STABILITY DURING THE ERECTION.
- TOWER SHALL BE PLUMBED IN CALM WEATHER.
- ANY STRUCTURAL MEMBER THAT HAS DAMAGED GALVANIZED SURFACES SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT, ACCORDANCE TO CSA STANDARD G189.
- AS BUILT PLUMB MEASUREMENTS SHALL BE RECORDED AT COMPLETION AND SUBMITTED TO TURRIS.
- ANY STRUCTURAL MEMBERS THAT HAVE DAMAGED GALVANIZED SURFACES SHALL BE CLEANED AND TOUCHED UP WITH TWO COATS OF ZINC-RICH PAINT, ACCORDANCE WITH CSA STANDARD G189.
- UPON COMPLETION OF ALL WORK, THE SITE SHALL BE CLEARNED OF ALL DEBRIS AS REQUIRED. ANY SURPLUS MATERIALS NOT REMOVED FROM THE SITE SHALL BE NEATLY STORED IN AN AREA DESIGNATED BY THE OWNER'S REPRESENTATIVE.

NUT ROTATION* FROM SNUG-TIGHT CONDITION (TURN-OF-NUT- PRETENSION)		
BOLT LENGTH**	DISPOSITION OF OUTER FACE OF BOLTED PARTS	
	BOTH FACES NORMAL TO BOLT AXIS OR ONE FACE NORMAL TO AXIS AND OTHER FACE SLOPED 1:20 MAX. (BEVELED WASHERS NOT USED)***	BOTH FACES SLOPED 1:20 MAX. FROM NORMAL TO BOLT AXIS (BEVELED WASHERS NOT USED)***
<= 4x BOLT DIA.	1/3 TURN	3/4 TURN
> 4x BOLT DIA. <= 8x BOLT DIA. OR 200mm	1/2 TURN	
> 8x BOLT DIA. OR 200mm	2/3 TURN	

* TABLE 8 OF CAN/CSA-S16-01
NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF WHETHER THE NUT OR BOLT IS TURNED.
TOLERANCE OF ROTATION ±30°. THIS TABLE APPLIES TO COARSE-THREADED HEAVY-HEX STRUCTURAL BOLTS OF ALL SIZES AND LENGTHS USED WITH HEAVY-HEX SEMI-FINISHED NUTS.

** BOLT LENGTH IS MEASURED FROM THE UNDERSIDE OF THE HEAD TO THE EXTREME END OF POINT.

*** BEVELED WASHERS ARE NECESSARY WHEN A490M OR A490 BOLTS ARE USED.

BOLT TENSION*			
NOM. BOLT DIA.		MIN. BOLT PRETENSION, kN**	
mm	in	ASTM A325	ASTM A490
	1/2	53	67
	5/8	85	107
16		91	114
	3/4	125	157
20		142	178
	7/8	174	218
22		176	220
24		205	257
	1	227	285
27		267	334
	1 1/8	249	356
30		326	408
	1 1/4	316	454
	1 3/8	378	538
36		475	595
	1 1/2	458	658
* TABLE 7 OF CAN/CSA S-16-01			
** EQUAL TO 70% OF THE SPECIFIED MINIMUM TENSILE STRENGTH.			

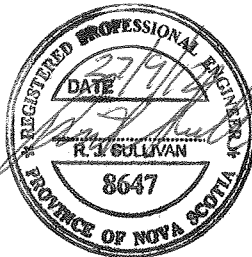


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www.turriscorp.com



REV.	DESCRIPTION	DWN.	CHK.	APP.
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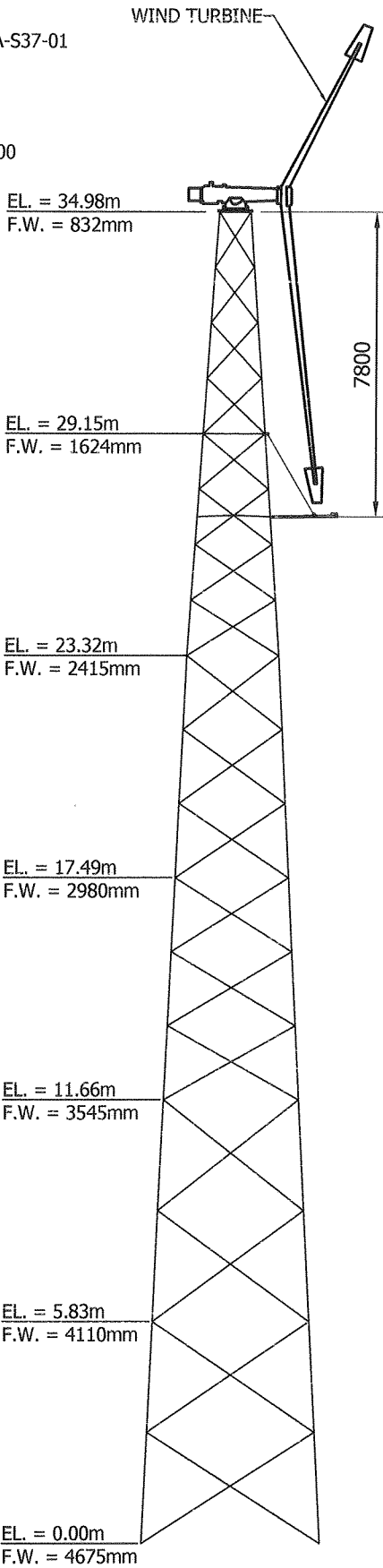
DWG REFERENCE	

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
GENERAL NOTES			
DATE	DWG. BY:	PROJECT NO.	REV.
AUG.21.12	MHD	12-0494	0
ENGD. APPR:	CHKD BY:	DWG. NO.	
SPG	NRR	12-0494-N01-01	

DESIGN SPECIFICATION: CSA-S37-01
WIND PRESSURE: 850 Pa
RADIAL ICE: 50 mm
IMPORTANCE FACTOR: 1.00
SERVICEABILITY FACTOR: 1.00

SECTION NO.	SECTION NAME	1	2	3	4	5	6
	PANEL TYPE	TS-82J9B	TS-7YG2B	TS-6XDYB	TS-5TCXB	SECTION 5	SECTION 6
	PANEL HEIGHT (m)	2.915					
	LEGS (350W)	HSS 219x10	HSS 219x8	HSS 168x10	HSS 141x10	HSS 141x6	HSS 114x6
	DIAGONALS (300W)	L89x89x6	L76x76x6	L64x64x6	L64x64x5	L51x51x5	L51x51x6
	HORIZONTALS (300W)						
	RED. SecH1 (300W)						



MAXIMUM BASE REACTIONS (FACTORED AS PER CSA-S37-01)

DOWNLOAD (kN):	1211.1
UPLIFT (kN):	1155.3
SHEAR (kN):	116.7

MEMBER LEGEND

A	L 89x89x6
B	L 102x102x6

GENERAL NOTES

1. TOWER DESIGNS CONFORM TO CSA-S37-01 UNLESS OTHERWISE SPECIFIED UNDER TOWER DESIGN LOADING.
2. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH CSA-S37-01 AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. SEE INDIVIDUAL SECTION ASSEMBLY DRAWINGS FOR PART NUMBERS AND SECTION CORRECT ASSEMBLY DETAILS.
4. REFER TO THE LATEST REVISIONS OF THE DRAWINGS SHOWN IN THE BILL OF MATERIALS.
5. PAL NUTS ARE PROVIDED FOR ALL TOWER BOLTS.
6. THE LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG OF EACH SECTION.
7. DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
8. WORK SHALL BE IN ACCORDANCE WITH CSA-S37-01, "ANTENNA, TOWERS AND ANTENNA - SUPPORTING STRUCTURES".
9. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
10. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
11. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
12. DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH CSA-S37-01.

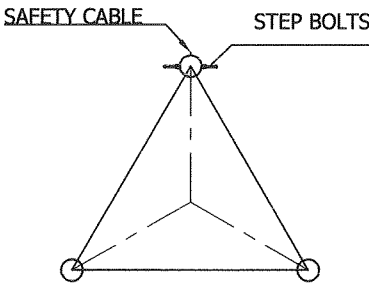
ASSEMBLY BOLT INSTALLATION

1. ALL STRUCTURE ASSEMBLY BOLTS ARE TO BE INSERTED OUT AND/OR UP, (EX. WITH NUTS AND ANCO NUTS ON OUTSIDE OF TOWER FACE AND/OR ON TOP FLANGE PLATES) UNLESS PROHIBITED BY LACK OF CLEARANCE.
2. ALL ASSEMBLY ARE TO BE TIGHTENED IN ACCORDANCE.
BOLTS ARE USED FOR BEARING-TYPE CONNECTIONS, AS A MINIMUM, THE BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE NOVEMBER 13, 1985, AISC, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
3. FLAT WASHERS ARE TO BE INSTALLED WITH BOLTS OVER SLOTTED HOLES.
CAUTION: DO NOT OVER TORQUE !! GALVANIZING ON BOLTS, NUTS AND STEEL PARTS MAY ACT AS A LUBRICANT, THUS OVER TIGHTENING MAY OCCUR AND MAY CAUSE BOLT TO CRACK AND SNAP OFF.

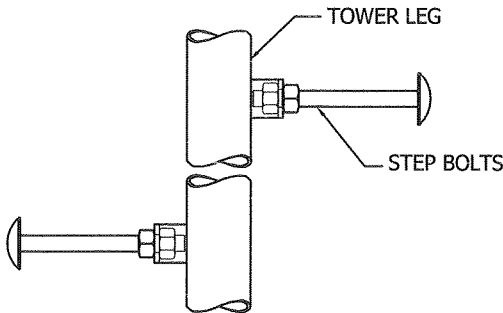
DESIGN THRUST

CONDITION 1 (ULTIMATE)
HORIZONTAL THRUST = 12.7 kips (56.5 kN)
MOMENT = 17.7 kips-ft (24.0 kNm)
MASS = 2500 kg

CONDITION 2 (OPERATIONAL)
HORIZONTAL THRUST = 3.4 kips (15.1 kN)
MOMENT = 71.9 kips-ft (97.5 kNm)
MASS = 2500 kg

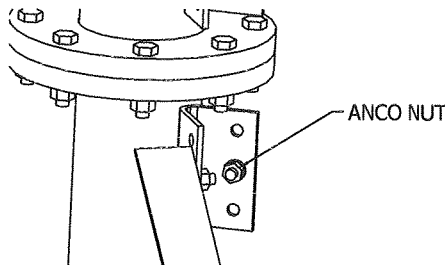


TYPICAL SECTION

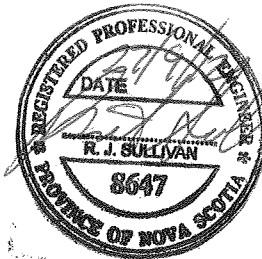


NOTE

STEP BOLTS ARE SUPPLIED FOR CONSTRUCTION PURPOSES AND ARE NOT INTENDED FOR USE BY UNQUALIFIED PERSONNEL. A DEVIATION FROM PERFECT ALIGNMENT IS ACCEPTABLE. FOR PROPER SAFETY INSTALL A SAFETY CLIMBING DEVICE.



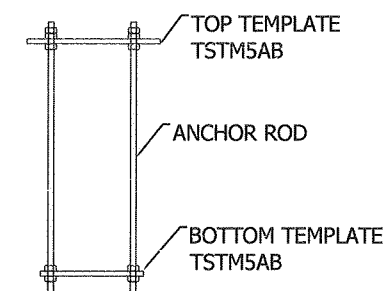
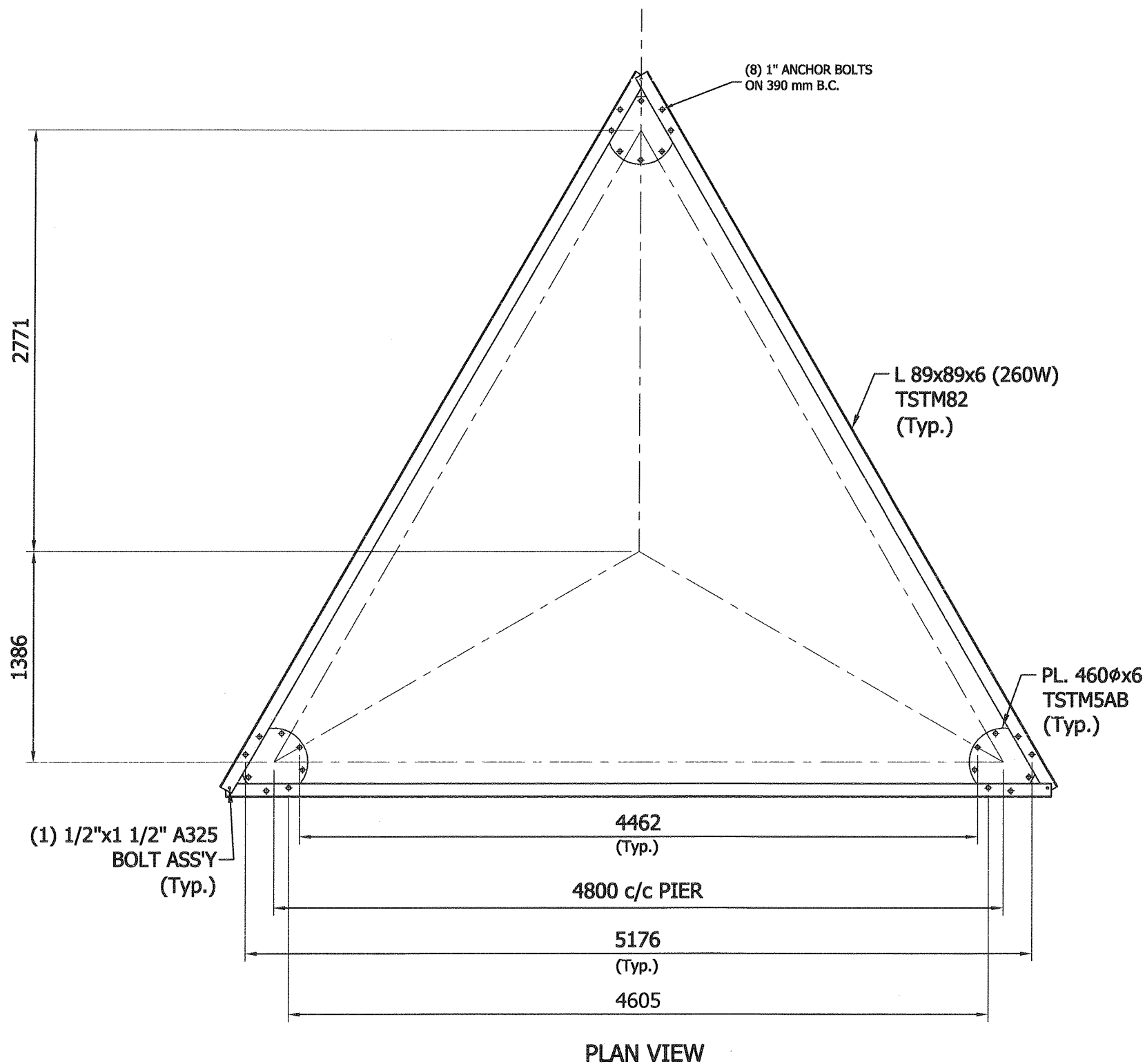
REV.	DESCRIPTION	DWN.	CHK.	APP.
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DWG REFERENCE

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE		TOWER PROFILE	
DATE	DWG. BY:	PROJECT NO.	REV.
AUG.21.12	MHD	12-0494	0
ENGD APPR:	CHKD BY:	DWG. NO.	
SPG	NRR	12-0494-E01-01	



TEMPLATE DETAIL

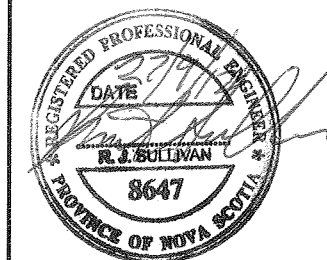
ANCHOR BOLT INSTALLATION NOTES:

1. ASSEMBLE THE TEMPLATE PARTS SO THAT A PERPENDICULAR LINE FROM THE FACE-CENTER OF THE ANGLE ASSEMBLY ON ANY GIVEN FACE IS ALIGNED WITHIN $\pm 1/2"$ (13MM) WITH THE CENTER OF THE OPPOSITE TEMPLATE PLATE. LOCATE CENTER POINT ON THE ANGLE ASSEMBLY HORIZONTALS BY MARKING MID POINT BETWEEN SYMMETRICAL BOLT HOLES.
2. ASSEMBLE THE TEMPLATE SO THAT THE CENTER-TO-CENTER DISTANCE OF BOLT GROUPS IS WITHIN $\pm 1/8"$ (3MM).
3. ALL ANCHOR BOLT TEMPLATE PLATES MUST BE AT THE SAME ELEVATION $\pm 1/8"$ (3MM) BEFORE POURING CONCRETE.
4. ASSEMBLE THE ANCHOR BOLTS WITH NUTS ABOVE AND BELOW THE TEMPLATE FULLY TIGHTENED TO MAINTAIN THE ANCHOR BOLTS AT THE PROPER ORIENTATION.
5. PLACE CONCRETE SO THAT IT DOES NOT PUSH THE ANCHOR BOLTS OUT OF PROPER ALIGNMENT.
6. AT ALL THREE FACES, MEASURE THE NOTED DISTANCES BETWEEN BOLTS TO CONFIRM MATCHING DIMENSIONS.

WARNING !!!!

- VERIFY THE INDICATED DIMENSIONS PRIOR TO POURING OF CONCRETE IN PIERS.
- AFTER ANCHOR BOLTS ARE INSTALLED AND CONCRETE HAS TAKEN ITS INITIAL SET, ANCHOR BOLTS MUST NOT BE MOVED, BENT OR REALIGNED IN ANY MANNER.

REV.	DESCRIPTION	DWN.	CHK.	APP.
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DWG REFERENCE

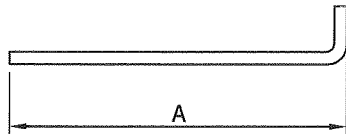
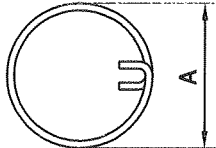
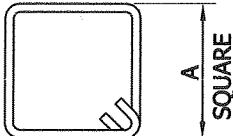
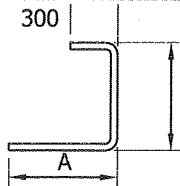
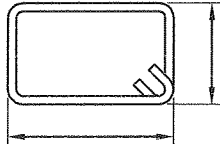
PROJECT

E&F 35m TTS Turbine Tower
Seaforth Energy Inc
Goldboro NS

TITLE

FOUNDATION TEMPLATE
TS-8 HSS 219x6-10 (8) 1" A.B ON 390 B.C.
KTM83A

DATE	DWG. BY	PROJECT NO.	REV.
JAN.04.10	RHN	12-0494	0
ENGD. APPR.	CHKD. BY	DWG. NO.	
SPG	NRR	21TM0009-E01-01	

BAR LIST FOR REINFORCING STEEL							
BAR LOCATION	BAR SIZE	TYPE	TOTAL LENGTH OF BAR (mm)	BENDING DIAGRAM		QTY. REQ'D	TOTAL BAR WT.
				DIM "A"			
BASE	25M	BENT	3990	3650		54	1875
BASE	10M	TIE	2735	780	 90° HOOKS BOTH ENDS	60	279
		STIRRUP			 135° HOOKS BOTH ENDS		
		STIRRUP					
		STIRRUP			 135° HOOKS BOTH ENDS		
BASE	20M	STRAIGHT	8850			168	7731
		STRAIGHT					
		STRAIGHT					
		STRAIGHT					
		STRAIGHT					
SUBSTITUTION OF IMPERIAL FOR METRIC SIZES AND WEIGHTS					GRAND TOTAL BAR WEIGHT:		9885
METRIC	IMPERIAL	BAR WEIGHT lb/m					
10M	#4	1.7					
15M	#5	3.5					
20M	#6	5.2					
25M	#8	8.7					
30M	#10	12.0					
35M	#11	17.3					

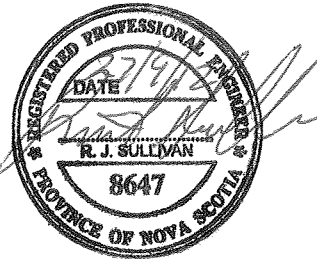
GENERAL CONCRETE CONSTRUCTION NOTES:

1. CONCRETE IS TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 30 MPa AT 28 DAYS.
2. REINFORCED CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH LATEST EDITION OF CSA-A23.1-00/CSA-A23.2-00
3. THE MINIMUM CONCRETE COVER OVER REBAR SHALL BE 75mm.
4. A) FOR EARTH CONDITIONS - POUR CONCRETE ON UNDISTURBED SOIL
B) FOR ROCK CONDITIONS - REMOVE LOOSE WEATHERED ROCK AND ONLY POUR CONCRETE OR GROUT ON GOOD SOLID ROCK.
5. BACKFILL SHALL BE SELECTED MATERIAL, WELL COMPACTED IN LAYERS NOT EXCEEDING 200mm.
6. BACKFILL SHALL BE PLACED SO AS TO PREVENT THE ACCUMULATION OF WATER AROUND THE INSTALLATION.

GENERAL CONCRETE REINFORCING NOTES:

1. CONCRETE REINFORCING STEEL SHALL BE IN ACCORDANCE WITH LATEST EDITION OF CSA-A23.1-00/CSA-A23.2-00
2. GRADE OF REINFORCING STEEL SHALL BE 400 MPa, UNLESS NOTED OTHERWISE.
3. EMBEDDED STRUCTURAL ANCHOR STEEL WILL BE SUPPLIED BY TURRIS. ALL OTHER STEEL IS TO BE SUPPLIED BY THE INSTALLATION CONTRACTOR.

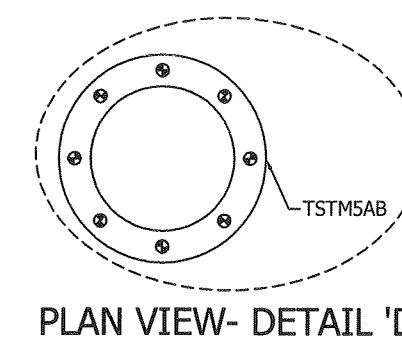
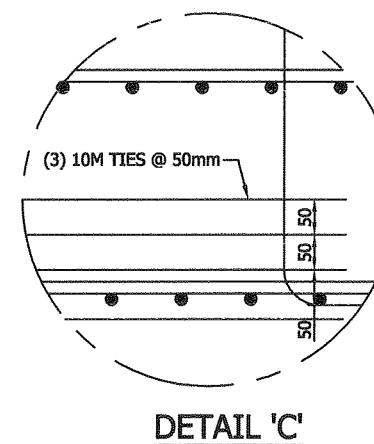
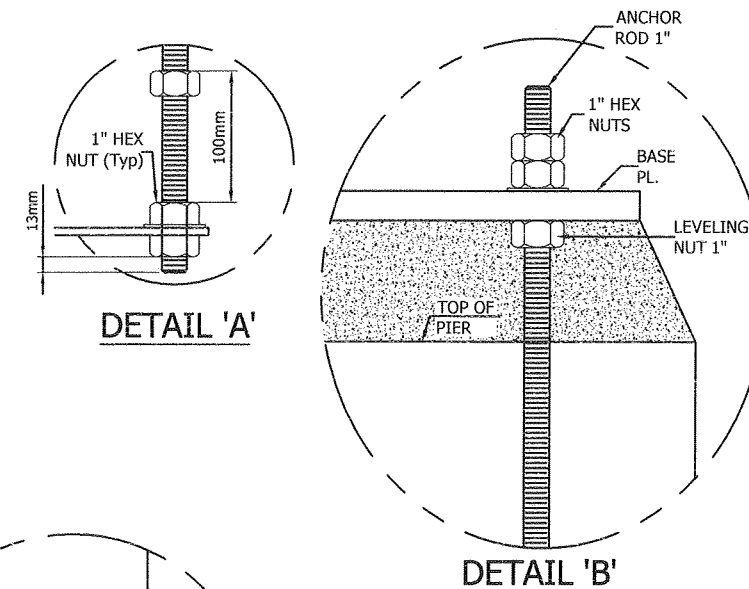
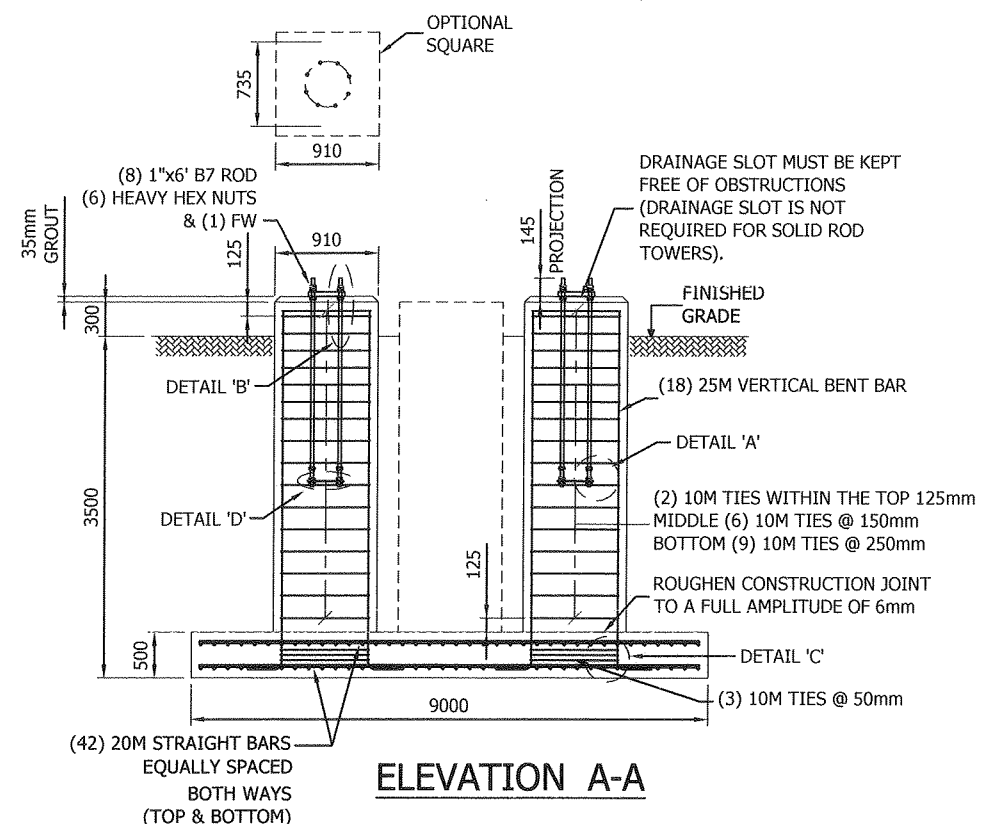
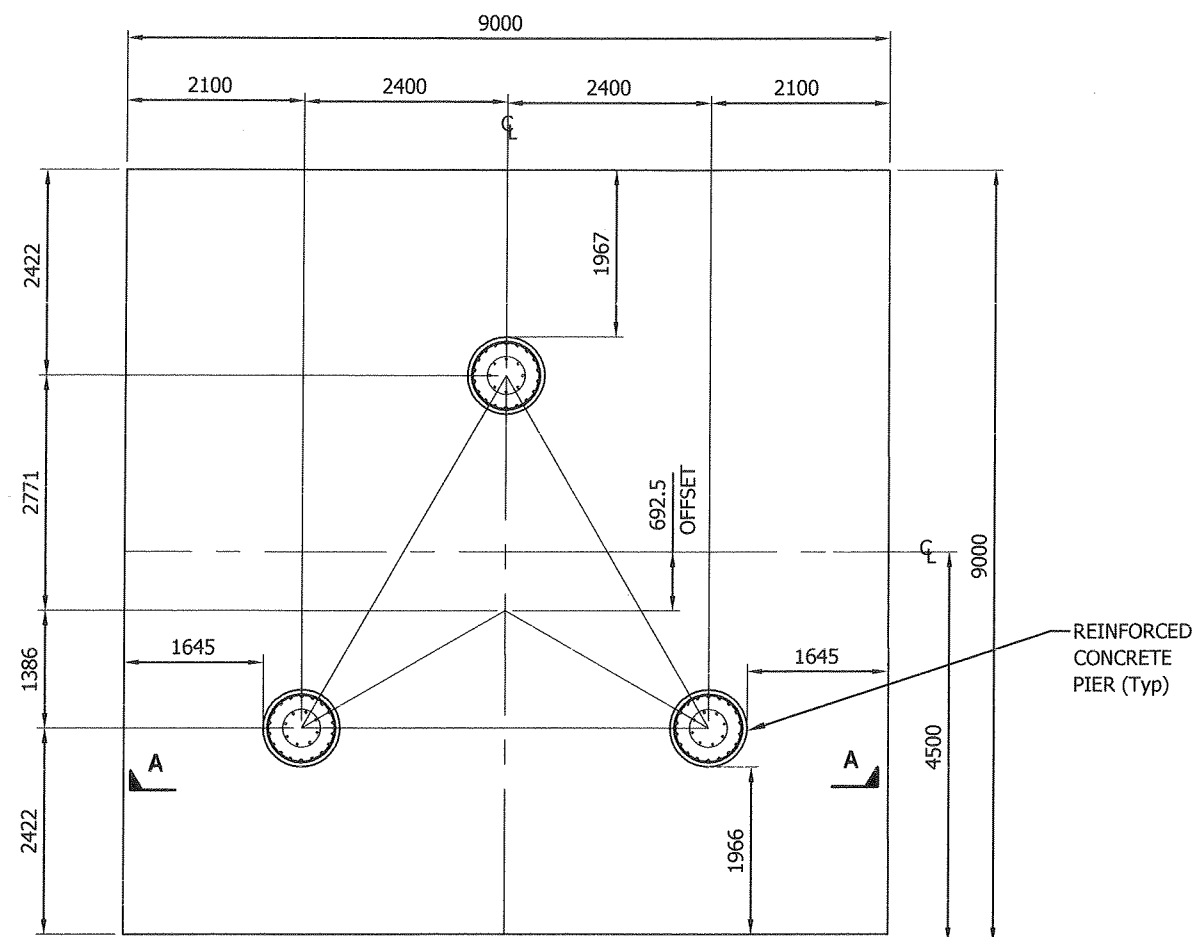
REV.	DESCRIPTION	DWN.	CHK.	APP.
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DWG REFERENCE	

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

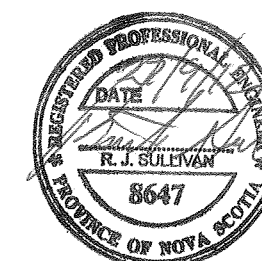
TITLE REBAR LIST			
DATE AUG.21.12	DWG. BY: MHD	PROJECT NO. 12-0494	REV. 0
ENGRD APPR: SPG	CHKD BY: NRR	DWG. NO. 12-0494-F01-01	



NOTES:

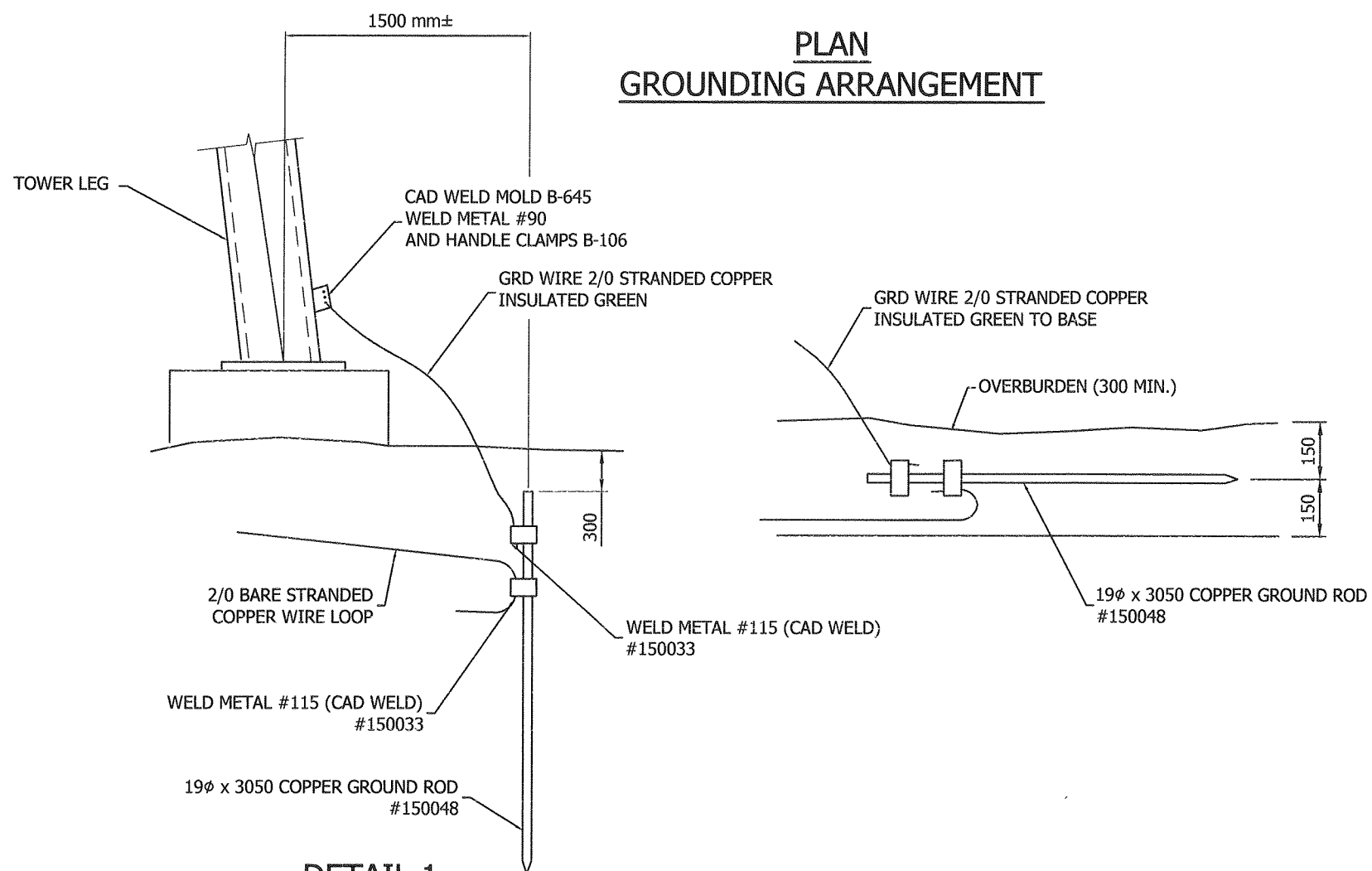
1. **THE FOUNDATION IS DESIGNED BASED ON CSA STANDARD A23.3-04 AND DATA PROVIDED IN REPORT NO. 15044 DATED JULY 16, 2012 BY LVMARTIME TESTING LIMITED (LVM-MTL).**
2. **THE BASE OF THE MAT FOUNDATION IS AT 3.5m BELOW FGL. THE AVERAGE DEPTH OF FROST PENETRATION IS 1.2 BELOW FGL AS PER THE SOIL REPORT. ADFREEZING AND FROST HEAVING WERE NOT CONSIDERED IN DESIGN. ULTIMATE BEARING CAPACITY OF 250 kPa.**
3. ALL DIMENSIONS IN mm UNO. DRAWING NOT TO SCALE. REBARS SHOWN ARE FOR ILLUSTRATION PURPOSE ONLY. FOR ANCHOR BOLT INFORMATION AND FOUNDATION LAYOUT, SEE FOUNDATION TEMPLATE DRAWING PROVIDED BY TOWER MANUFACTURER.
4. **MIN. CONCRETE COMPRESSIVE STRENGTH SHALL BE 30MPa AT 28 DAYS. AIR ENTRAINMENT OF 5 TO 8%. MAX. SIZES OF COARSE AGGREGATE 20mm. MAX. SLUMP 80mm. TYPE 10 (GU) NORMAL PORTLAND CEMENT CAN BE USED FOR ALL FOUNDATION CONCRETE.**
5. **GROUT SHALL BE NON-SHRINK TYPE, PREMIXED COMPOUND CONSISTING OF NON-METALLIC AGGREGATE, CEMENT, AND WATER REDUCING AND PLASTICIZING AGENTS CAPABLE OF DEVELOPING MINIMUM COMPRESSIVE STRENGTH OF 50MPa AT 28 DAYS, 35MPa AT 7 DAYS. GROUT SHALL BE SLOTTED TO PROVIDE A MEAN OF DRAINAGE.**
6. ESTIMATED VOLUME OF CONCRETE = **47 cu.m.**
7. REINFORCING BAR SHALL CONFORM TO CSA STANDARD G30.18 WITH MIN. YIELD OF **400MPa (GRADE 400)**. CONCRETE INSTALLATION SHALL CONFORM TO CSA REQUIREMENTS.
8. ALL REINFORCEMENT SHALL HAVE A MINIMUM OF **75mm** OF CONCRETE COVERAGE.
9. **THE BASE OF FOOTING SHOULD BE FOUNDED ON NATURALLY DEPOSITED, UNDISTURBED SOIL. THE BASE OF THE FOUNDATION SHALL NOT BEAR IN WATER DURING CONSTRUCTION. THE FOUNDATION IS DESIGNED BASED ON BACK FILL MATERIAL, WHICH SHOULD HAVE A MIN. DRY DENSITY OF 21.0 kN/cu.m. SUBMERGED DENSITY OF SOIL IS 11 kN/cu.m. ALL BACK FILL SHALL BE COMPACTED IN LIFTS NOT TO EXCEED 200mm.**
10. A COLD JOINT IS PERMITTED AT THE TOP OF THE PAD IF THE PIER REINFORCEMENT AND/OR ANCHOR BOLTS (IF THE BOLTS EXTEND INTO THE PAD) ARE PLACED PRIOR TO PLACEMENT OF CONCRETE INTO THE PAD. THE COLD SEAM SHALL BE ROUGH AND COATED WITH A BONDING AGENT.
11. CONCRETE TEST CYLINDERS SHALL BE TAKEN AND STORED IN ACCORDANCE WITH CSA STANDARDS REQUIREMENTS. A SINGLE CONCRETE TEST CYLINDER SHALL BE BROKEN PRIOR TO THE INSTALLATION OF THE STRUCTURE TO CONFIRM THE CONCRETE HAS ACHIEVED THE SPECIFIED STRENGTH.
12. CROWN THE TOP OF FOUNDATION TO FACILITATE DRAINAGE.
13. DESIGN LEG REACTIONS BASED ON FACTORED LOADS:
 - a. **DOWN = 1211.08 kN**
 - b. **UPLIFT = 1155.25 kN**
 - c. **SHEAR = 116.66 kN**
14. DESIGN TOWER FOUNDATION REACTIONS BASED ON FACTORED LOADS:
 - a. **DOWN =99.53 kN**
 - b. **SHEAR =195.43 kN**
 - c. **MOMENT = 4768.93 kN**

REV.	DESCRIPTION	DWN.	CHK.	A
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[illegible]

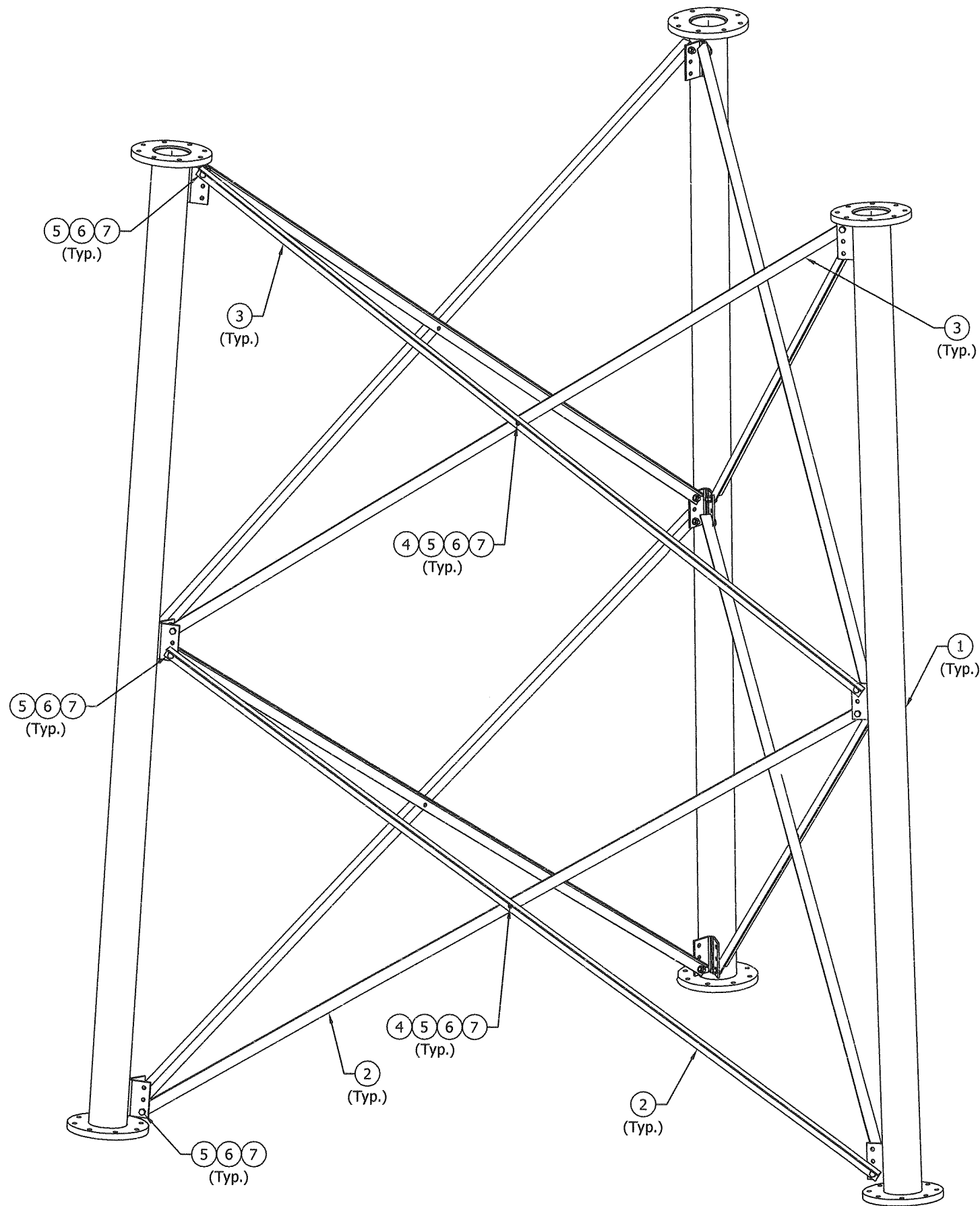
PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
TOWER FOUNDATION			
DATE	DWG. BY:	PROJECT NO.	REV.
AUG. 21.12	MHD	12-0494	0
ENG'D APP'D:	CHECK'D BY:	DWG. NO.	
SPG	NRR	12-0494-F02-01	

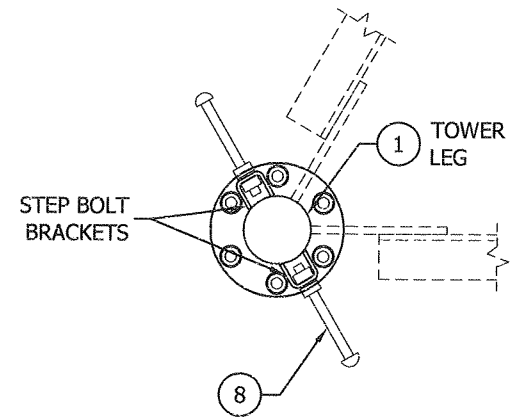


SECTION A-A
ROCK CONDITION

TITLE			
GROUNDING			
TOWER GROUNDING-EARTH & ROCK			
TYPICAL FOR SELF SUPPORT TOWERS			
DATE	DWG. BY	PROJECT NO.	REV.
AUG.21.12	MHD	12-0494	0
DESIGN APPR:	CHECKED BY	DWG. NO.	
SPG	NRK	12-0494-F03-01	



Line #	Part No.	Qty.	Description
1	TSLE2B	3	HSS 219 ODx10x5836 LEG WELD'T
2	TSDG8JC	6	L 89x89x6x5142 (300W)
3	TSDG8JD	6	L 89x89x6x4905 (300W)
4	TSSH01	6	BAR 64x6x64 (300W)
5	110660	30	BOLT ONLY 3/4" x 2-1/4" (19 x 57mm) A325 - HDG
6	110208	30	3/4" (19mm) F-436 FLATWASHER - HDG
7	110511	30	3/4" LOCKNUT PIN TYPE
8	111171	14	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)

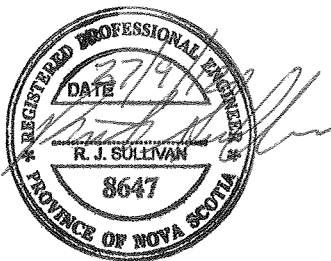


SECT "A-A"

GENERAL NOTES

- 1- LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG AND MUST BE LOCATED AT THE BOTTOM OF THE SECTION FOR PROPER ASSEMBLY.
- 2- FLANGE BOLTS ARE FOR FLANGE PLATES AT THE BOTTOM OF THE SECTION.
- 3- DRAWING IS N.T.S. AND IS FOR ASSEMBLY PURPOSES ONLY.

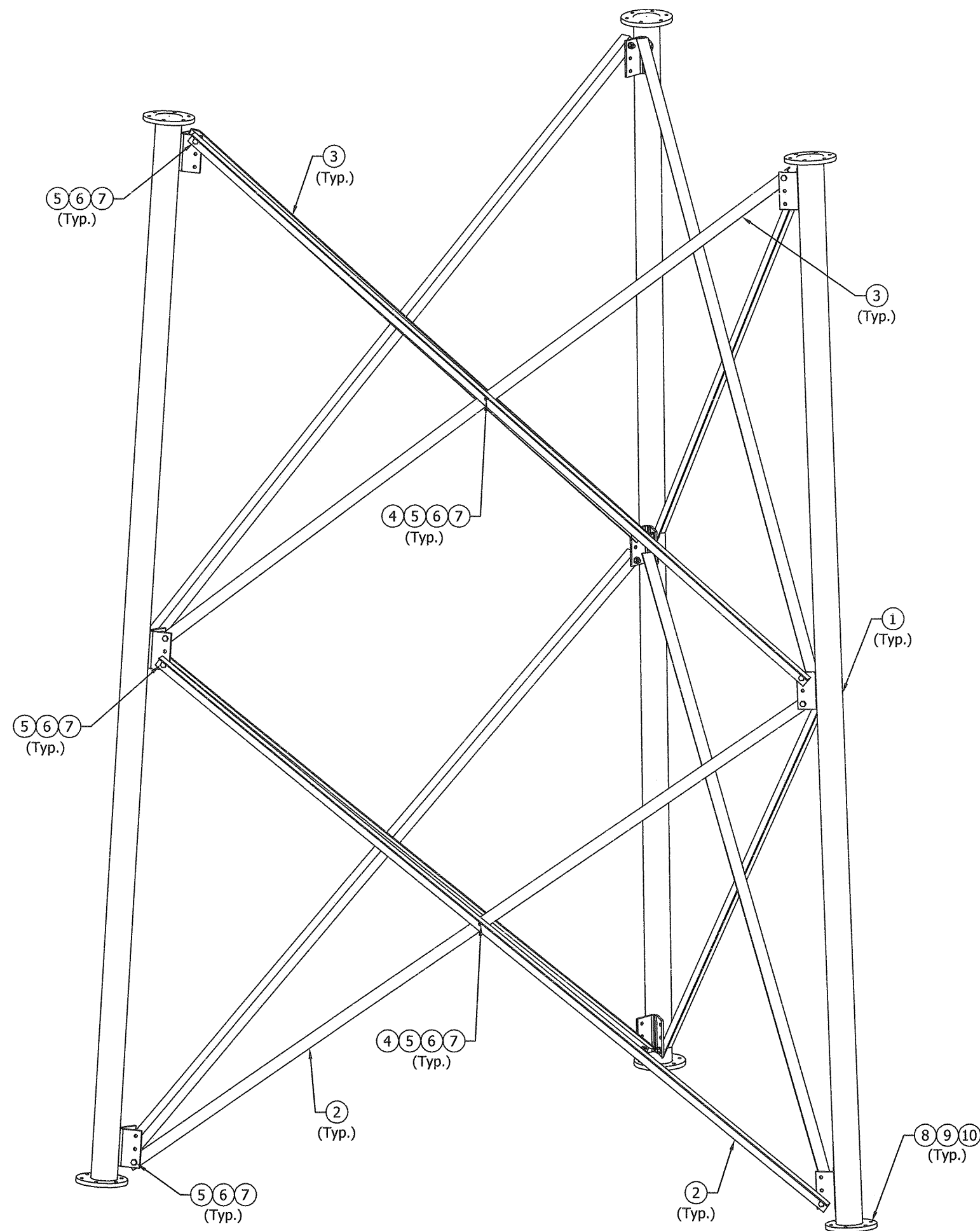
REV.	DESCRIPTION	DWN.	CHK.	APP.
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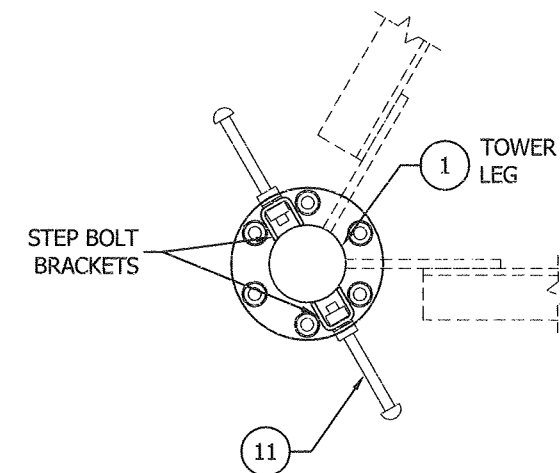
DWG REFERENCE

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
BASE SECTION			
TS-82J9B STANDARD SECTION			
LEG HSS 219x10 STEP BOLTS			
DATE	DWG. BY:	PROJECT NO.	REV.
AUG.28.12	R.H	12-0494	0
ENGRD APPR:	CHKD BY:	DWG. NO.	
SPG	NR	21BS0008-E03-01	



Line #	Part No.	Qty.	Description
1	TSLEY	3	HSS 219 OD x8 x 5836 LEG WELD'T
2	TSDG7GA	6	L 76x76x6x4665 (300W)
3	TSDG7GB	6	L 76x76x6x4440 (300W)
4	TSSH01	6	BAR 64x6x64 (300W)
5	110660	30	BOLT ONLY 3/4" x 2-1/4" (19 x 57mm) A325 - HDG
6	110208	30	3/4" (19mm) F-436 FLATWASHER - HDG
7	110511	30	3/4" LOCKNUT PIN TYPE
8	110764	24	BOLT ONLY 1" x 4" (25 x 102mm) A325 - HDG
9	110214	24	1" (25.4mm) F-436 FLATWASHER - HDG
10	110513	24	1" LOCKNUT PIN TYPE
11	111171	14	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)

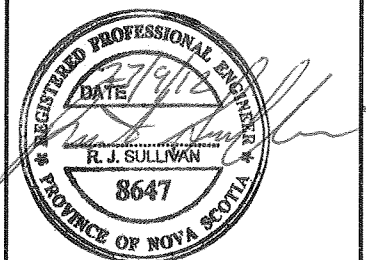


SECT "A-A"

NOTES

- 1- LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG AND MUST BE LOCATED AT THE BOTTOM OF THE SECTION FOR PROPER ASSEMBLY.
- 2- FLANGE BOLTS ARE FOR FLANGE PLATES AT THE BOTTOM OF THE SECTION.
- 3- DRAWING IS N.T.S. AND IS FOR ASSEMBLY PURPOSES ONLY.

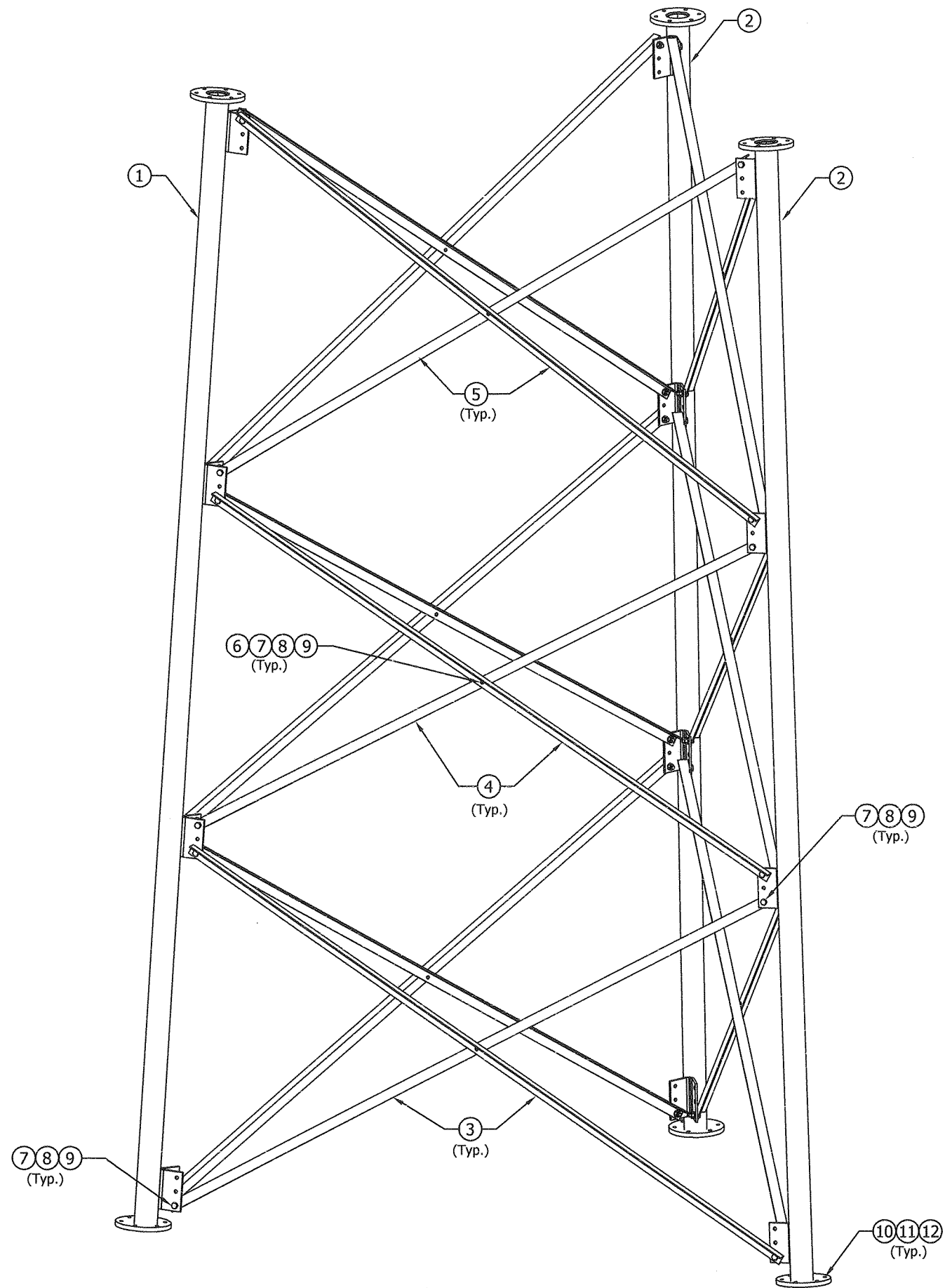
REV.	DESCRIPTION	DWN.	CHK.	APP.
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DWG REFERENCE	

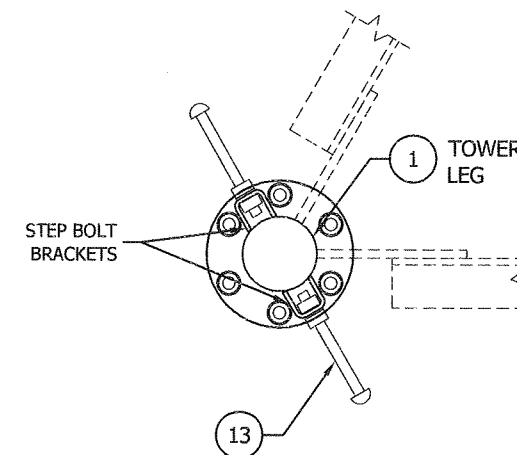
PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
SECTION ASSEMBLY			
TS-7YGB2B STANDARD SECTION			
LEG HSS 219x8 STEP BOLTS			
DATE	DWG. BY:	PROJECT NO.	REV.
AUG.28.12	R.H	12-0494	0
ENGRD APPR:	CHKD BY:	DWG. NO.	
SPG	NRR	21SA0008-E03-01	



3-D VIEW

ITEM	Part No.	Qty.	Description
1	TSLEXTS	1	HSS 168 ODx10x5836 mm LEG WELD'T
2	TSLEXLT1	2	HSS 168 ODx 10 x 5836 LEG WELD'T
3	TSDG6DC	6	L 64x64x6x3713 (300W)
4	TSDG6DD	6	L 64x64x6x3480 (300W)
5	TSDG6DE	6	L 64x64x6x3393 (300W)
6	TSSH02	9	BAR 64x6x64 (300W)
7	110654	45	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG
8	110205	45	5/8" (15.9mm) F-436 FLATWASHER - HDG
9	110510	45	5/8" LOCKNUT PIN TYPE
10	110765	24	BOLT ONLY 1" x 4-1/2" (25 x 115mm) A325 - HDG
11	110214	24	1" (25.4mm) F-436 FLATWASHER - HDG
12	110513	24	1" LOCKNUT PIN TYPE
13	111171	14	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)

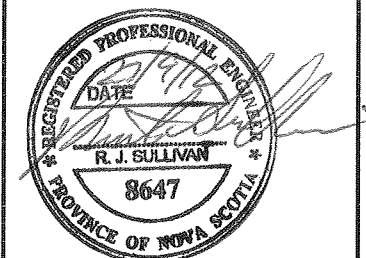


SECTION "A-A"

NOTES

- 1- LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG AND MUST BE LOCATED AT THE BOTTOM OF THE SECTION FOR PROPER ASSEMBLY.
- 2- FLANGE BOLTS ARE FOR FLANGE PLATES AT THE BOTTOM OF THE SECTION.
- 3- DRAWING IS N.T.S. AND IS FOR ASSEMBLY PURPOSES ONLY.

REV.	DESCRIPTION	DWN.	CHK.	APP.
1	REVISED SPLICE BOLT LENGTH DATE: AUG.28.12	MHD	NRR	SPG

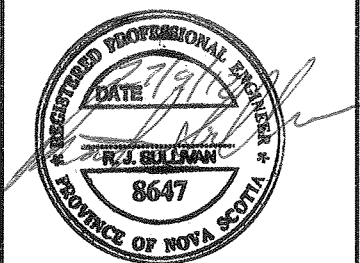


DWG REFERENCE	

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
SECTION ASSEMBLY TS-6XDYB TRANSITION SECTION LEG HSS 168x10 TO 219x5-10			
DATE AUG.28.12	DWG BY R.H	PROJECT NO. 12-0494	REV. 1
ENGR APPR SPG	CHKD BY NRR	DWG. NO. 21SA0008-E04-01	

REV.	DESCRIPTION	DWN.	CHK.	APP.
1	CHANGED ITEM #1 WAS TSLETTAS AND ITEM #10 WAS 7/8"x3-1/4" DATE: AUG.02.11	AAD	NRR	SPG

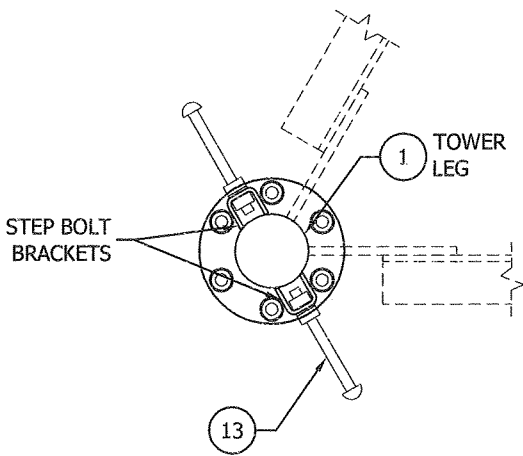


DWG REFERENCE

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
SECTION ASSEMBLY			
TS-5TCXB			
TRANSITION LEG HSS 141x10 TO 168x10			
DATE	DWG. BY	PROJECT NO.	REV.
DEC.02.10	RHN	12-0494	1
ENGD APPD:	CHKD BY:	DWG. NO.	
SPG	NRR	21SA0129-E01-01	

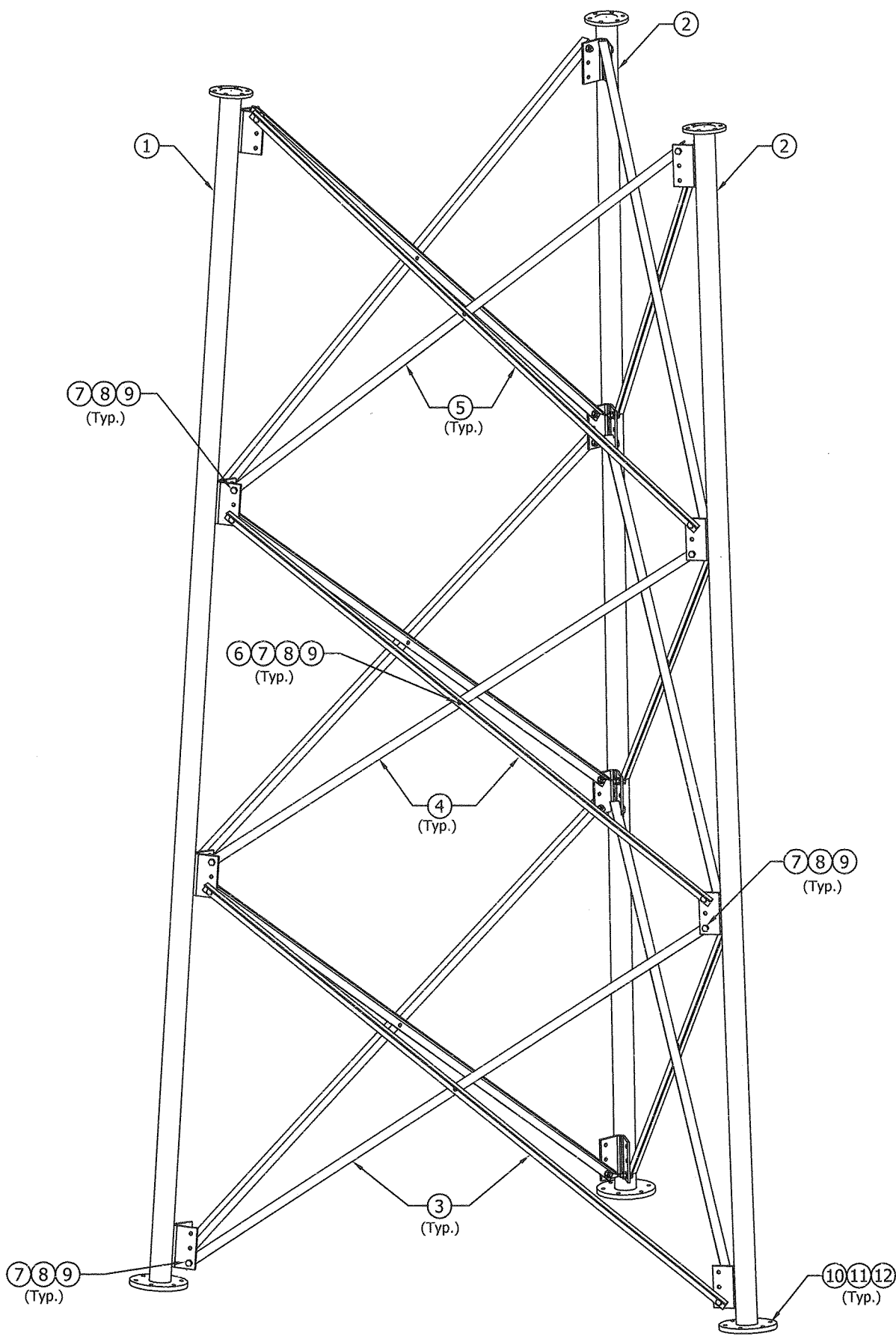
ITEM	Part No.	Qty.	Description
1	TSLETTTS	1	HSS 141 OD x 10 x 5836 LEG WELD'T
2	TSLETTA	2	HSS 141 OD x 10 x 5836 LEG WELD'T
3	TSDG5CC	6	L 64x64x5x3224 (300W)
4	TSDG5CD	6	L 64x64x5x2990 (300W)
5	TSDG5CE	6	L 64x64x5x2926 (300W)
6	TSSH02	9	BAR 64x6x64 (300W)
7	110654	45	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG
8	110205	81	5/8" (15.9mm) F-436 FLATWASHER - HDG
9	110510	45	5/8" LOCKNUT PIN TYPE
10	110962	24	BOLT ONLY 7/8" x 3-3/4" (22 x 95mm) A325 - HDG
11	110210	24	7/8" (22.2mm) F-436 FLATWASHER - HDG
12	110512	24	7/8" LOCKNUT PIN TYPE
13	111171	14	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)



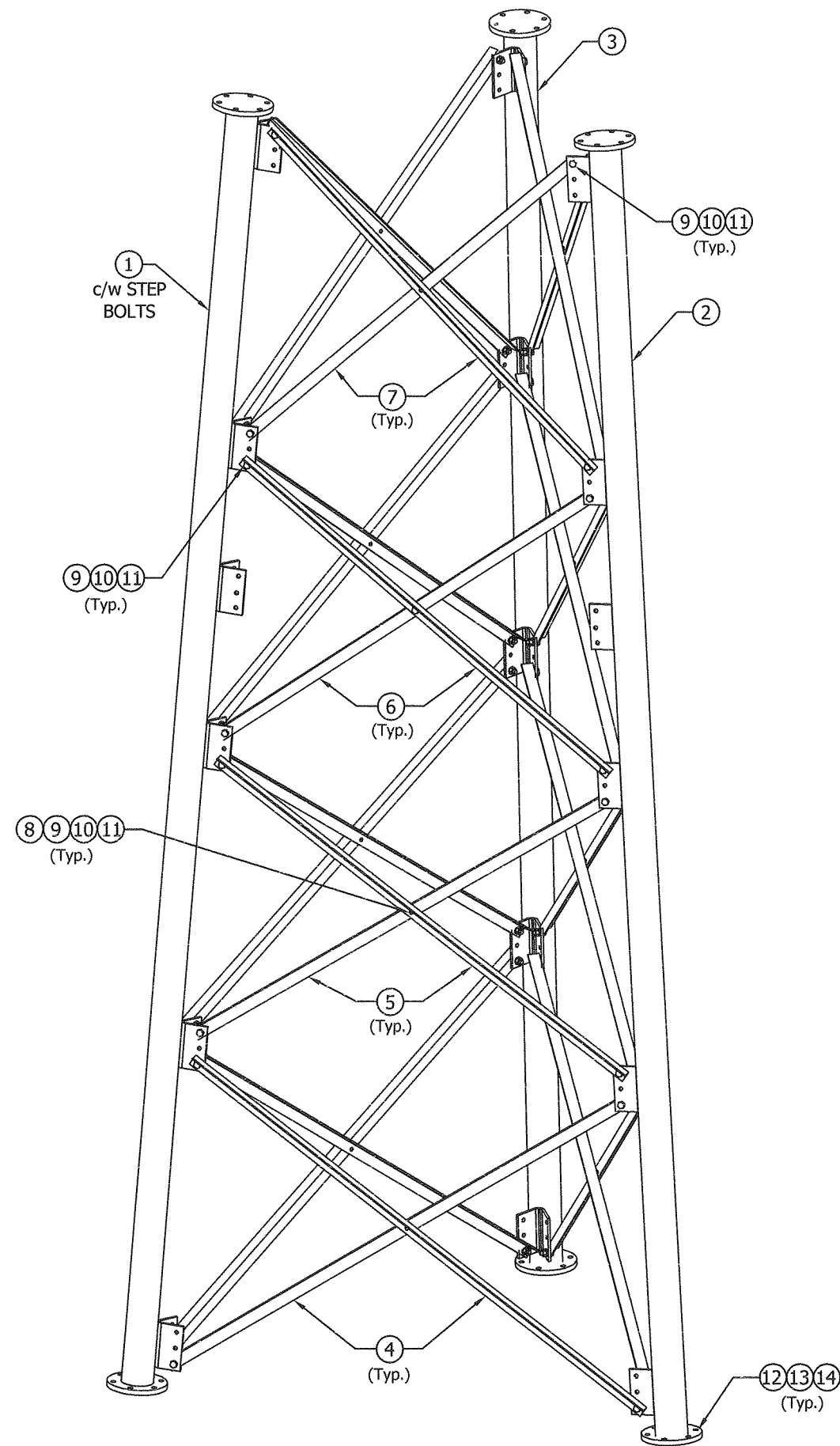
SECT "A-A"

NOTES

- 1- LEG PART NUMBER IS **STAMPED AT THE BOTTOM** OF EACH LEG AND MUST BE LOCATED AT THE BOTTOM OF THE SECTION FOR PROPER ASSEMBLY.
- 2- FLANGE BOLTS ARE FOR FLANGE PLATES AT THE BOTTOM OF THE SECTION.
- 3- DRAWING IS N.T.S. AND IS FOR ASSEMBLY PURPOSES ONLY.

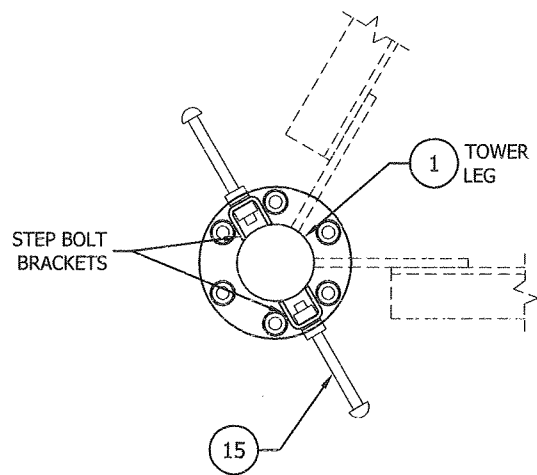


3-D VIEW



3-D VIEW

ITEM	Part No.	Qty.	Description
1	1795T1A	1	HSS 141 ODx6x 5836 LEG WELD'T
2	1795T1B	1	HSS 141 ODx6x 5836 LEG WELD'T
3	1795T1C	1	HSS 141 ODx6x 5836 LEG WELD'T
4	1795T1D	6	L 51x51x5x2487 (300W)
5	1795T1E	6	L 51x51x5x2247 (300W)
6	1795T1F	6	L 51x51x5x2097 (300W)
7	1795T1G	6	L 51x51x5x2040 (300W)
8	TSSH02	12	BAR 64x6x64 (300W)
9	110654	61	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG
10	110205	61	5/8" (15.9mm) F-436 FLATWASHER - HDG
11	110510	61	5/8" LOCKNUT PIN TYPE
12	110960	18	BOLT ONLY 7/8" x 3-1/4" (22 x 83mm) A325 - HDG
13	110210	18	7/8" (22.2mm) F-436 FLATWASHER - HDG
14	110512	18	7/8" LOCKNUT PIN TYPE
15	111171	14	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)



SECTION "A-A"

- NOTES
- 1- LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG AND MUST BE LOCATED AT THE BOTTOM OF THE SECTION FOR PROPER ASSEMBLY.
 - 2- FLANGE BOLTS ARE FOR FLANGE PLATES AT THE BOTTOM OF THE SECTION.
 - 3- DRAWING IS N.T.S. AND IS FOR ASSEMBLY PURPOSES ONLY.

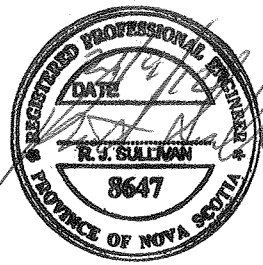


ENGINEERING
PROCUREMENT
PROJECT MGMT

70 Todd Road
Georgetown Ontario L7G 4R7, Canada
Tel: +1 (905)-877-8885 Fax: +1 (905)-877-8835
www.turriscorp.com



REV.	DESCRIPTION	DWN.	CHK.	APP.



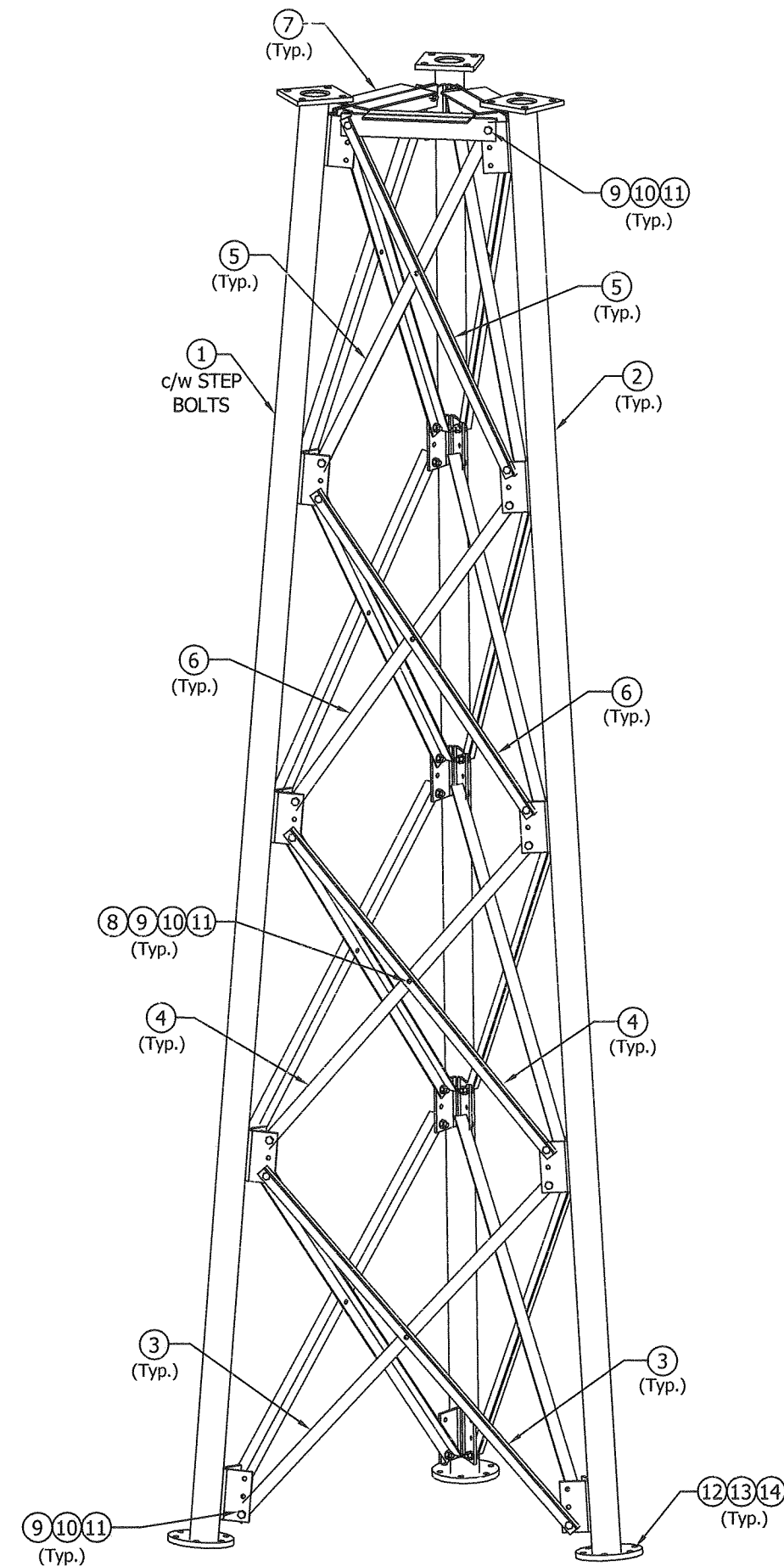
DWG REFERENCE

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

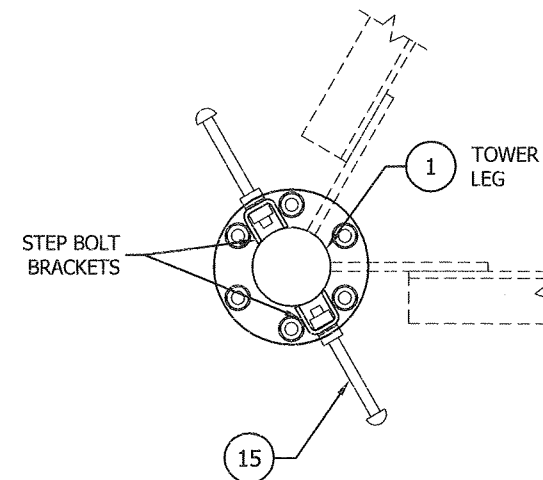
TITLE	SECTION ASSEMBLY SECTION 5
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DATE	DWG. BY	PROJECT NO.	REV.
AUG.28.12	A.A	12-0494	0
ENGD APPD: SPG	CHKD BY: NRR	DWG. NO. 12-0494-E02-01	

ITEM	Part No.	Qty.	Description
1	1795T2A	1	HSS 114 ODx6x5836 LEG WELD'T
2	1795T2B	2	HSS 114 ODx6x5836 LEG WELD'T
3	1795T2C	6	L 51x51x6x1889 (300W)
4	1795T2D	6	L 51x51x6x1654 (300W)
5	1795T2E	6	L 51x51x6x1568 (300W)
6	1795T2F	6	L 51x51x6x1542 (300W)
7	1795T2G	3	L 89x89x6x622 (300W)
8	TSSH02	12	BAR 64x6x64 (300W)
9	110654	61	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG
10	110510	61	5/8" LOCKNUT PIN TYPE
11	110205	61	5/8" (15.9mm) F-436 FLATWASHER - HDG
12	110961	18	BOLT ONLY 7/8" x 3-1/2" (22 x 89mm) A325 - HDG
13	110512	18	7/8" LOCKNUT PIN TYPE
14	110210	18	7/8" (22.2mm) F-436 FLATWASHER - HDG
15	111171	14	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)



3-D VIEW

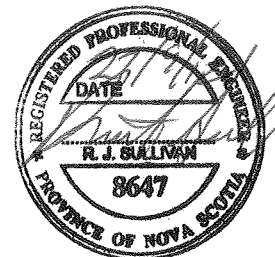


SECTION "A-A"

NOTES

- 1- LEG PART NUMBER IS STAMPED AT THE BOTTOM OF EACH LEG AND MUST BE LOCATED AT THE BOTTOM OF THE SECTION FOR PROPER ASSEMBLY.
- 2- FLANGE BOLTS ARE FOR FLANGE PLATES AT THE BOTTOM OF THE SECTION.
- 3- DRAWING IS N.T.S. AND IS FOR ASSEMBLY PURPOSES ONLY.

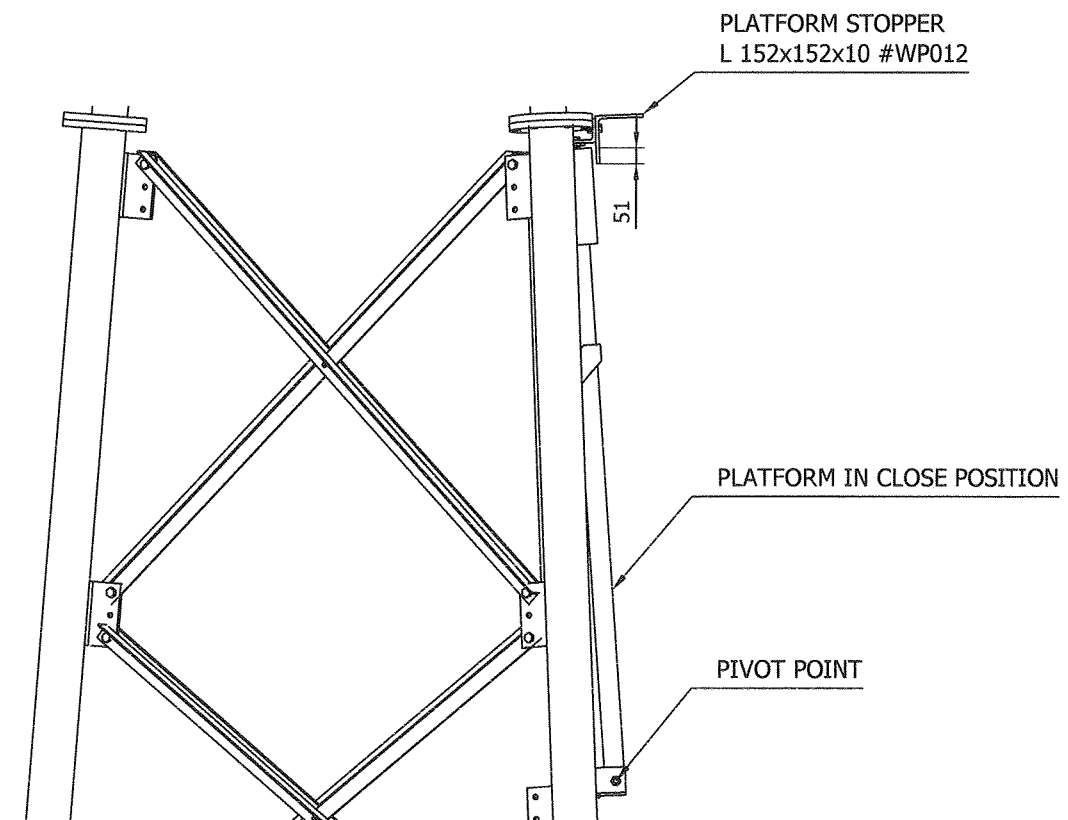
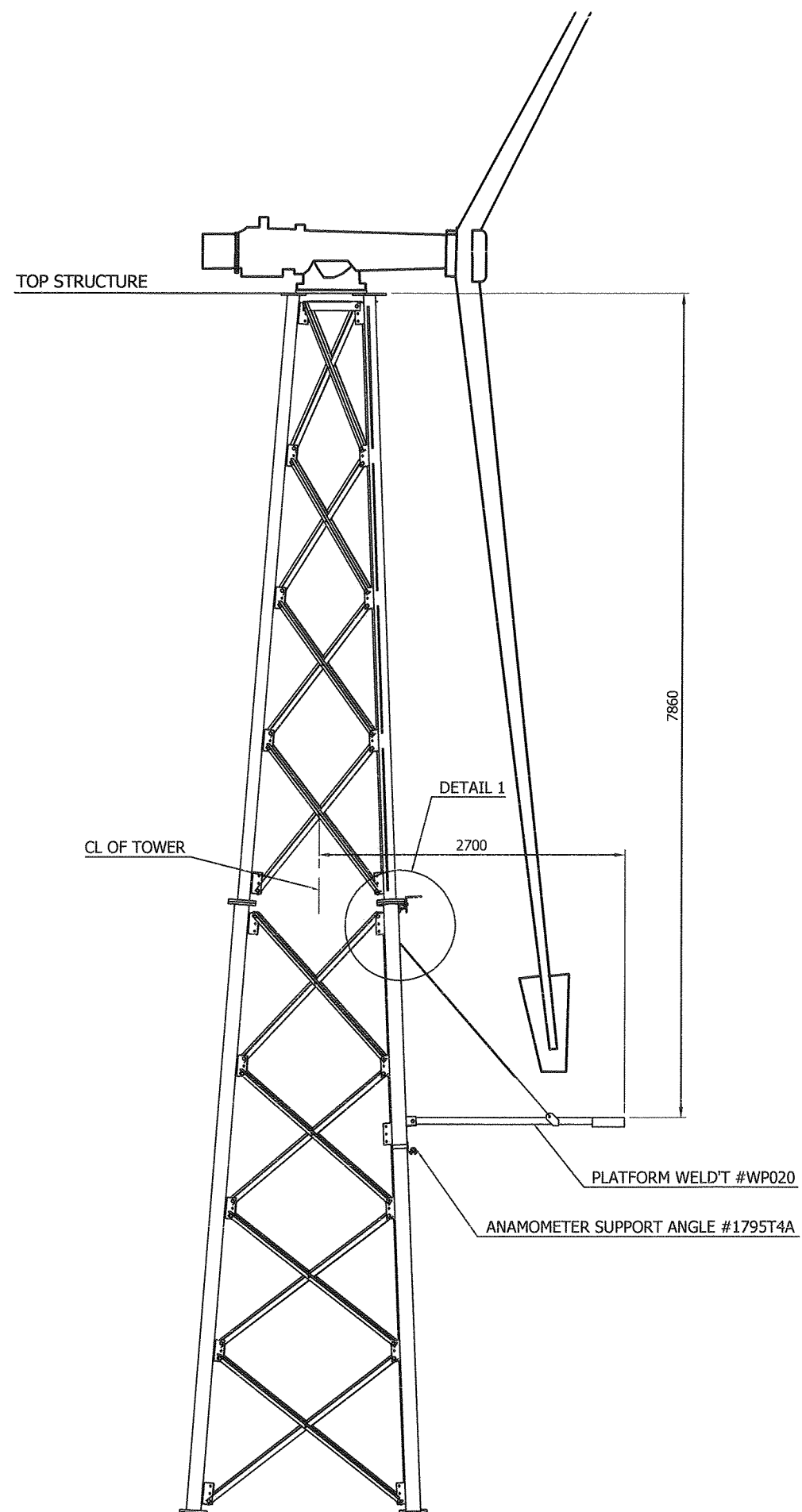
REV.	DESCRIPTION	DWN.	CHK.	APP.
1	REVISED SPLICE BOLT LENGTH DATE: AUG.28.12	MHD	NRR	SPG



DWG REFERENCE

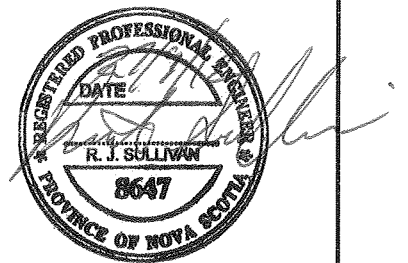
PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE				SECTION ASSEMBLY	
				SECTION 6	
DATE	DWG. BY	PROJECT NO.	REV.		
AUG.28.12	A.A	12-0494	1		
ENGRD APPD:	CHKD BY:	DWG. NO.			
SPG	NRR	12-0494-E03-01			



DETAIL 1

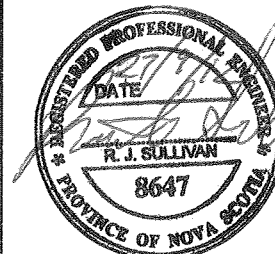
REV.	DESCRIPTION	DWN.	CHK.	APP.
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[illegible]

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
WORK PLATFORM INSTALLATION ELEVATION VIEW			
DATE SEP.06.12	DWG. BY: MHD	PROJECT NO. 12-0494	REV. 0
ENGR. APPR:	CHECKED BY:	DWG. NO. 12-0494-E04-01	

REV.	DESCRIPTION	DWN.	CHK.	APP.
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DWG REFERENCE	

PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
WORK PLATFORM INSTALLATION PLAN VIEW			
DATE SEP.06.12	DWG. BY MHD	PROJECT NO. 12-0494	REV. 0
ENGR. APPR.	CHKD BY	DWG. NO.	12-0494-E05-01

L 152x152x10 #WP011
c/w (4) 1/2"x1-3/4" A325 BOLT ASSY
DOUBLE NUT & FLAT WASHERS

PLATFORM STOPPER
L 152x152x10 #WP011 c/w
(2) 5/8" HEX NUTS

L 127x127x8 #1795T3B

NEOPRENE PAD

3/8" AIRCRAFT CABLE
(Typ.)

PLATFORM WELD'T #WP020

TOOL TRAY

FOR SECTION DETAIL
SEE 10-0795-E03

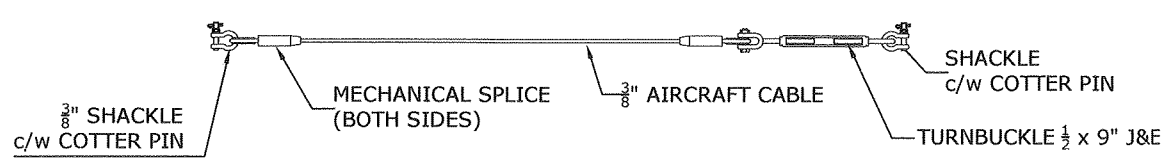
L 89x89x6 #7431T11C
(Typ.)

5/8"x2-1/4" A325 BOLT ASSY
c/w LOCK NUT PIN & FLAT WASHER
(Typ.)

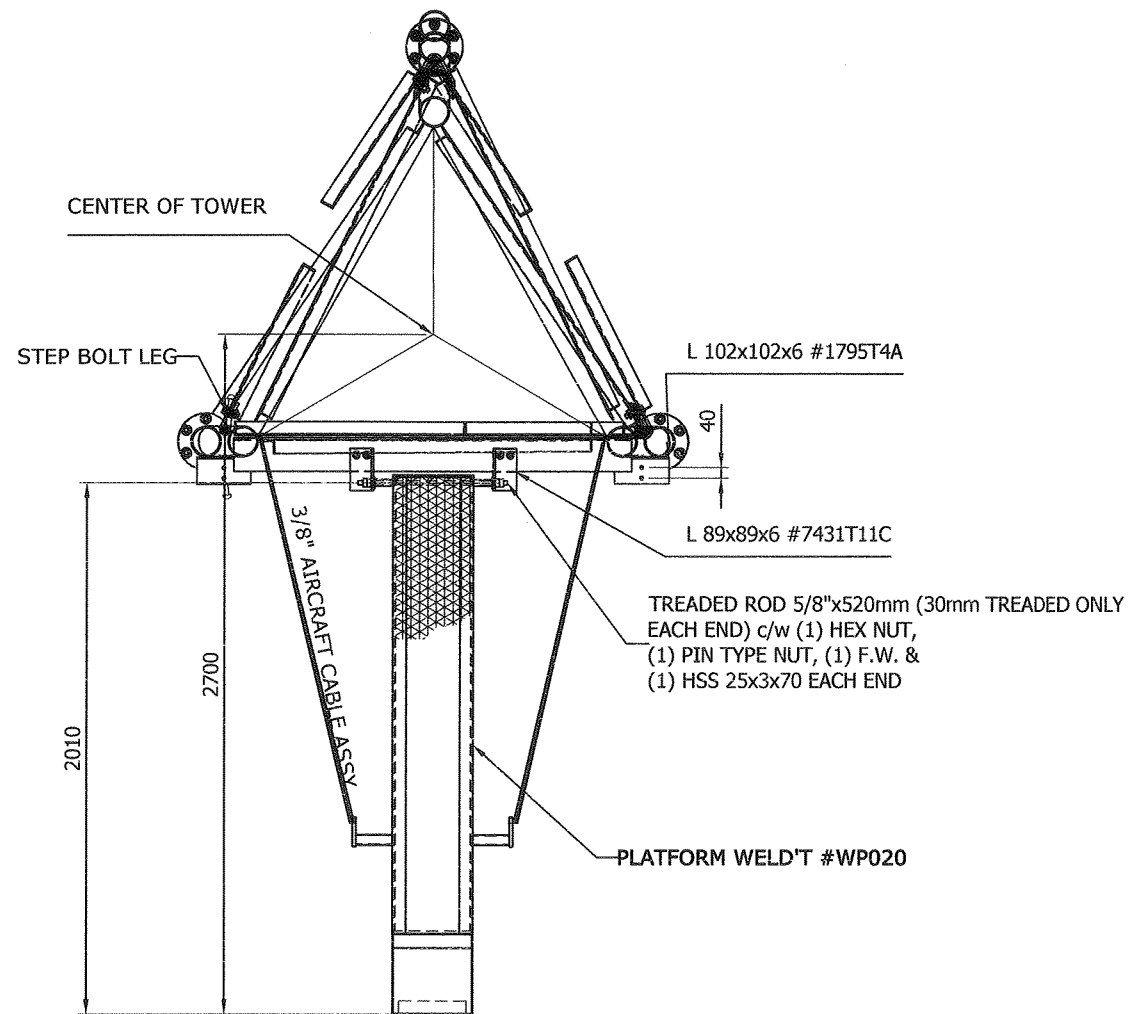
L 102x102x6 #1795T3A
BACK TO BACK c/w
(3) 5/8"x2" A325 BOLT ASSY
& 3/8" RING FILL

L 102x102x6 #1795T4A
c/w (1) 5/8" U-BOLT ASSY
@ 6-1/4" c/c & (1) 1/2" SS-BOLT
ASSY @ 1-7/8" c/c (TYPE 304)

3-D VIEW

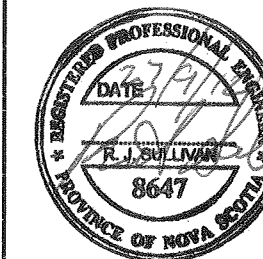


AIRCRAFT CABLE ASSEMBLY



PLAN VIEW

REV.	DESCRIPTION	DWN.	CHK.	APP.
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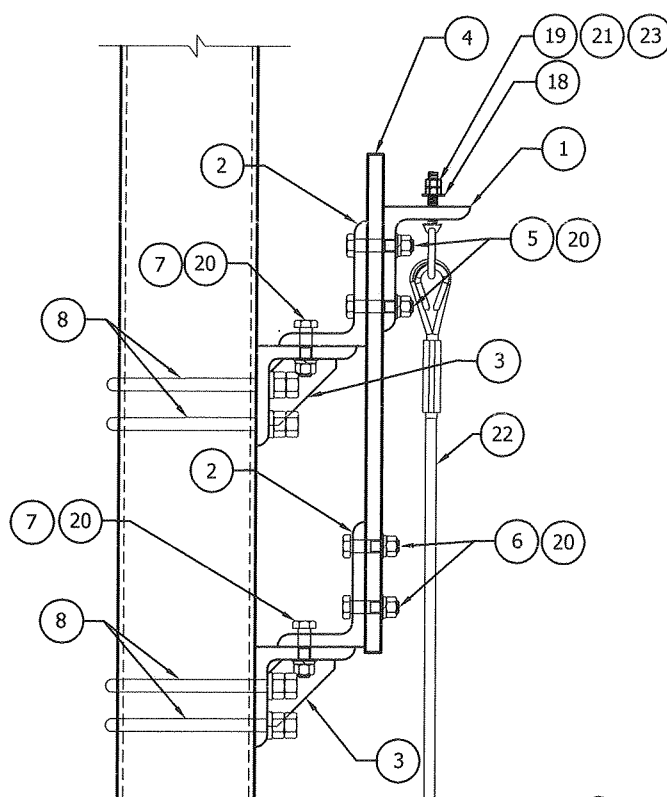


DWG REFERENCE

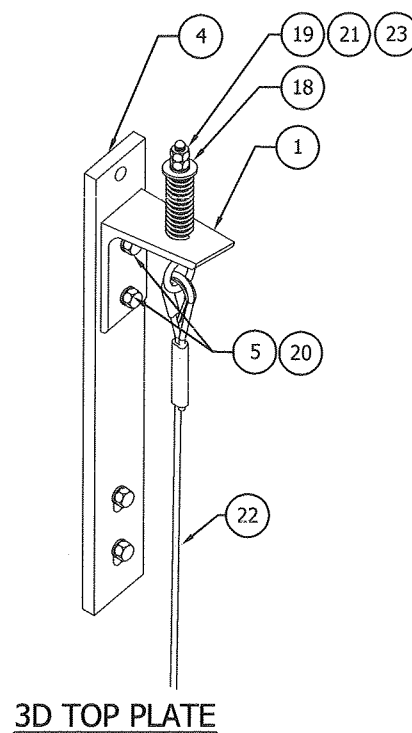
PROJECT	E&F 35m TTS Turbine Tower
CUSTOMER	Seaforth Energy Inc
SITE NAME	Goldboro NS

TITLE			
SAFETY CLIMB CABLE			
DATE SEP.21.12	DWG BY: AA	PROJECT NO. 12-0494	REV. 0
ENGRD APPR: SPG	CHKD BY: NR	DWG NO. 12-0504-E04-01	

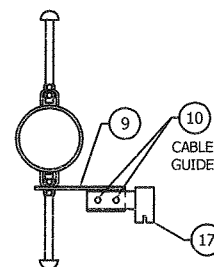
Line #	Part No.	Description	Quantity	Unit Wt (kg)
1	TSC014A	L 127x89x13x51 (300W)	1	1.1
2	TSC014B	L 127x89x13x138 (300W)	2	3.8
3	TSC016	L 102x102x13x228 (300W)	2	4.8
4	TSC017	BAR 64x16x507 (300W)	1	4.1
5	110007	1/2" x 2-3/4"(12.7 x 70mm) A325 BOLT ASS'Y - HDG	2	0.1
6	110005	1/2" x 2-1/4"(12.7 x 57mm) A325 BOLT ASS'Y - HDG	2	0.1
7	110004	1/2" x 2" (12.7 x 51mm) A325 BOLT ASS'Y - HDG	4	0.1
8	110260	U-BOLT ASSY 1/2x5-1/16" (12.7 x 129mm) C/C	4	0.9
9	TSC019	L 51x51x5x190 (300W)	5	1
10	110088	3/8" x 1" (9.5 x 25.4mm) UNC GR.5 BOLT - HDG	10	0
11	TSC020	BENT BAR 339x10x255 WELD'T	1	17
12	191003	THREADED ROD 5/8"x7-1/2" (16 x 190mm)	4	1.4
13	160414	1/2"x9" (12.7 x 229mm) RH JAW	1	0
14	HC-12	1/2" (12.7mm) HOSE CLAMP	1	0
15	140003	U-BOLT CLIP 3/8" (9.5mm) CAMPBELL GALV.	2	0
16	140073	STANDARD THIMBLE 9.5mm GENERIC GALV.	1	0
17	160427	CABLE GUIDE	5	0
18	110581	LOCK NUT 1/2" (12.7mm) (PIN-TYPE)	1	0
19	110143	1/2" (12.7mm)-13 HEX NUT - A325- HDG	4	0.1
20	110203	1/2" (12.7mm) GR. 5 LOCKWASHER - HDG	7	0
21	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	3	0
22	161005	3/8" (9.5mm) AIRCRAFTCABLE ASS'Y 38m	1	1
23	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	4	0
24	160601	DIE SPRING 25mm HOLE MED. H. DUTY	1	0
25	110146	5/8" (15.9mm)-11 HEX NUT - A325 HDG	4	0
26	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	8	0
27	TCS021	BENT BAR 127x13x488 (300W)	1	6
28	160401	SAFETY SLEEVE	1	0
29	161000	CARABINER (NK525)	1	



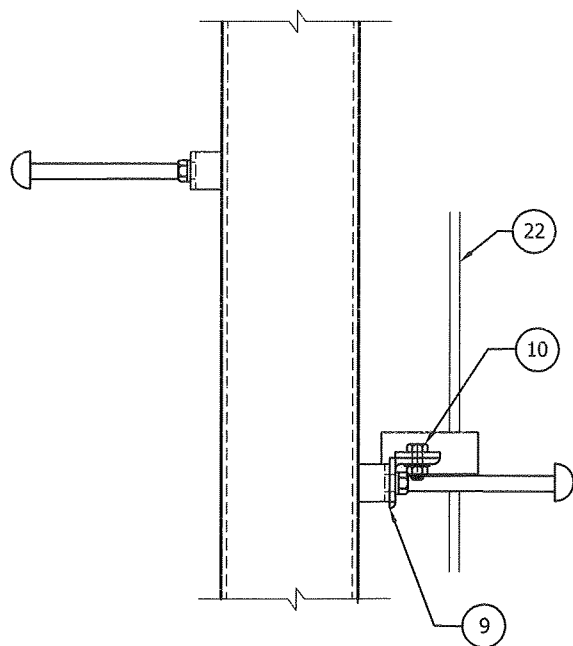
TOP SUPPORT



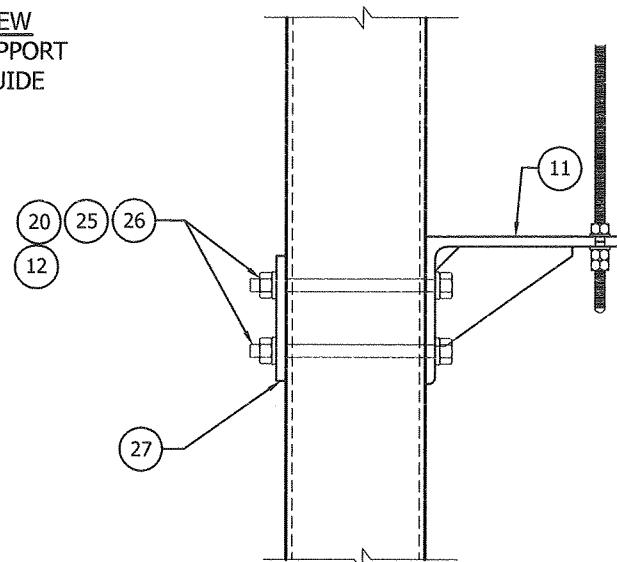
3D TOP PLATE



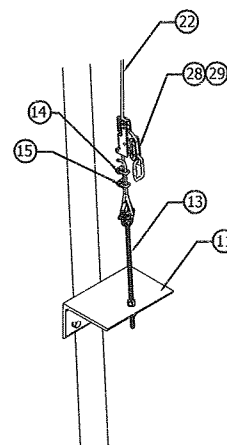
PLAN VIEW
MIDDLE SUPPORT
CABLE GUIDE



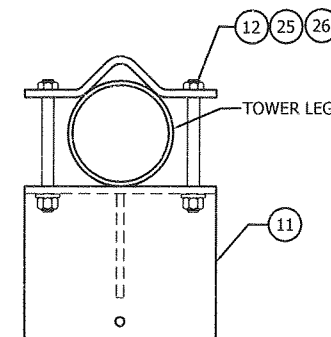
MIDDLE SUPPORT
@EVERY 25'



BOTTOM SUPPORT



3-D BOTTOM SUPPORT



PLAN VIEW
BOTTOM SUPPORT

NOTES:

1. AIRCRAFT CABLE TO BE TENSIONED TO APPROX. 500 POUNDS. DO NOT OVERTIGHTEN THE CABLE AT THE BOTTOM CONNECTION.
2. INSTALL CABLE GUIDES AT APPROXIMATELY 25' SPACING.
3. INSTALL GUY CLIPS AT 2 $\frac{3}{8}$ " (60mm) SPACING. APPLY TORQUE OF 45 ft-lbs (60 Nm) EACH.



Project No.: 12-0494 Rel.00

Bill of Materials - Material List

Description: Embedded Material Tower 1

Customer: Seaforth Energy Inc

Site: Goldboro NS

Date: AUG 09, 2012

Line #	Part No.	Description	Qty. Req'd	Units of Measure	Unit WT (kg)	Total WT (kg)	Drawing Number	Comments
Construction Template								
1	KTM83A	TEMPLATE KIT FOR TS-8 LEG HSS 219x6 to 219x10	1				21TM0009-E01-01R00	
1.1	110002	1/2" x 1-1/2" (12.7 x 38mm) A325 BOLT ASS'Y - HDG	4	EACH	0.1	0.4		
1.2	TSTM82	L 89x89x6x5435 (260W) BARE METAL	3	EACH	45.5	136.4	21TM0008-M03-01R00	
Tower Base Material								
2	KFN5A	FOUNDATION MATERIAL FOR LEG HSS219x6 TO HSS 219x10	1				21TM0005-M01-01R00	
2.1	110150	1" (25.4mm) -8 HEX NUT - 2H HDG	144	EACH	0.4	61.2		
2.2	110214	1" (25.4mm) F-436 FLATWASHER - HDG	48	EACH	0.0	0.0		
2.3	190002	THD ROD 1"x6' (25x1829mm) 8-UNC 2' GALV. ONE END	24	EACH	7.2	172.8		
2.4	TSTM5A B	PL 460 DIAx6 (300W) BARE METAL	6	EACH	4.0	24.0	21TM0005-M01-01R00	
Grounding Below Grade Material								
3	150048	GRD ROD 3/4"x10' (19x3048) COPPER	3	EACH	0.0	0.0		
4	150058	GRD WIRE 2/0 BARE STRANDED COPPER	20	Meter	0.0	0.0		
5	150033	WELD METAL # 115 (BUR 115)	7	EACH	0.0	0.0		



Project No.: 12-0494 Rel.00

6	150298	GRD WIRE 2/0 STRANDED COPPER INS. GREEN (RW90)	10	Meter	0.0	0.0		
7	DWG-F	FOUNDATION DRAWING PACKAGE	1	EACH	0.0	0.0		
					Total Wt:	394.7		



Project No.: 12-0494 Rel.01

Bill of Materials - Material List

Description: Embedded Material Tower 2

Customer: Seaforth Energy Inc

Site: Goldboro NS

Date: AUG 09, 2012

Line #	Part No.	Description	Qty. Req'd	Units of Measure	Unit WT (kg)	Total WT (kg)	Drawing Number	Comments
Construction Template								
1	KTM83A	TEMPLATE KIT FOR TS-8 LEG HSS 219x6 to 219x10	1				21TM0009-E01- 01R00	
1.1	110002	1/2" x 1-1/2" (12.7 x 38mm) A325 BOLT ASS'Y - HDG	4	EACH	0.1	0.4		
1.2	TSTM82	L 89x89x6x5435 (260W) BARE METAL	3	EACH	45.5	136.4	21TM0008-M03- 01R00	
Tower Base Material								
2	KFN5A	FOUNDATION MATERIAL FOR LEG HSS219x6 TO HSS 219x10	1				21TM0005-M01- 01R00	
2.1	110150	1" (25.4mm) -8 HEX NUT - 2H HDG	144	EACH	0.4	61.2		
2.2	110214	1" (25.4mm) F-436 FLATWASHER - HDG	48	EACH	0.0	0.0		
2.3	190002	THD ROD 1"x6" (25x1829mm) 8- UNC 2' GALV. ONE END	24	EACH	7.2	172.8		
2.4	TSTM5A B	PL 460 DIAx6 (300W) BARE METAL	6	EACH	4.0	24.0	21TM0005-M01- 01R00	
Grounding Below Grade Material								
3	150048	GRD ROD 3/4"x10' (19x3048) COPPER	3	EACH	0.0	0.0		
4	150058	GRD WIRE 2/0 BARE STRANDED COPPER	20	Meter	0.0	0.0		
5	150033	WELD METAL # 115 (BUR 115)	7	EACH	0.0	0.0		



Project No.: 12-0494 Rel.01

6	150298	GRD WIRE 2/0 STRANDED COPPER INS. GREEN (RW90)	10	Meter	0.0	0.0		
7	DWG-F	FOUNDATION DRAWING PACKAGE	1	EACH	0.0	0.0		
					Total Wt:	394.7		

**Bill of Materials - Material List****Description: Structure Material Tower 1****Customer: Seaforth Energy Inc****Site: Goldboro NS****Date: AUG 28, 2012**

Line #	Part No.	Description	Qty. Req'd	Units of Measure	Unit WT (kg)	Total WT (kg)	Drawing Number	Comments
Bottom Section 1								
1	TS-82J9B	Standard Base Section for Leg HSS 219x10	1				21BS0008-E03-01R00	
1.1	110208	3/4" (19mm) F-436 FLATWASHER - HDG	35	EACH	0.0	0.0		
1.2	110511	3/4" LOCKNUT PIN TYPE	35	EACH	0.0	0.0		
1.3	110660	BOLT ONLY 3/4" x 2-1/4" (19 x 57mm) A325 - HDG	35	EACH	0.0	0.0		
1.4	111171	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)	15	EACH	0.5	7.5		
1.5	TSDG8J C	L 89x89x6x5142 (300W)	6	EACH	45.5	273.0	21DG0029-M01-01R00	
1.6	TSDG8J D	L 89x89x6x4905 (300W)	6	EACH	44.1	264.6	21DG0030-M01-01R00	
1.7	TSLE2B	HSS 219 OD x 10 x 5836 LEG WELD'T	3	EACH	338.6	1015.9	21LE0002-M01-01R04	
1.8	TSSH01	BAR 64 x 6 x 64 (300W)	6	EACH	0.2	1.2	21SH0001-M01-01R00	
Section 2								
2	TS-7YGB2B	Standard Section Leg HSS 219 ODx8	1				21SA0008-E03-01R00	
2.1	110208	3/4" (19mm) F-436 FLATWASHER - HDG	35	EACH	0.0	0.0		
2.2	110214	1" (25.4mm) F-436	24	EACH	0.0	0.0		

		FLATWASHER - HDG						
2.3	110511	3/4" LOCKNUT PIN TYPE	35	EACH	0.0	0.0		
2.4	110513	1" LOCKNUT PIN TYPE	25	EACH	0.0	0.0		
2.5	110660	BOLT ONLY 3/4" x 2-1/4" (19 x 57mm) A325 - HDG	35	EACH	0.0	0.0		
2.6	110764	BOLT ONLY 1" x 4" (25 x 102mm) A325 - HDG	25	EACH	0.0	0.0		
2.7	111171	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)	15	EACH	0.5	7.5		
2.8	TSDG7 GA	L 76x76x6x4665 (300W)	6	EACH	32.3	193.8	T:\Standards\Towers\TTS\DG\Fabrication\TSDG7GA-M01-01.dwg	
2.9	TSDG7 GB	L 76x76x6x4440 (300W)	6	EACH	30.5	183.0	T:\Standards\Towers\TTS\DG\Fabrication\TSDG7GB-M01-01.dwg	
2.10	TSLEY	HSS 219 OD x 8 x 5836 mm LEG WELD'T	3	EACH	365.9	1097.7	21LE0002-M03-01R04	
2.11	TSSH01	BAR 64 x 6 x 64 (300W)	6	EACH	0.2	1.2	21SH0001-M01-01R00	

Section 3

3	TS- 6XDYB	Transition Section Leg HSS 168 ODx10 to HSS 219x5-10	1				21SA0008-E04-01R00	
3.1	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	47	EACH	0.0	0.0		
3.2	110214	1" (25.4mm) F-436 FLATWASHER - HDG	25	EACH	0.0	0.0		
3.3	110510	5/8" LOCKNUT PIN TYPE	47	EACH	0.0	0.0		
3.4	110513	1" LOCKNUT PIN TYPE	25	EACH	0.0	0.0		
3.5	110654	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG	47	EACH	0.0	0.0		
3.6	110765	BOLT ONLY 1" x 4-1/2" (25 x 115mm) A325 - HDG	25	EACH	0.0	0.0		
3.7	111171	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)	15	EACH	0.5	7.5		
3.8	TSDG6 DC	L 64x64x6x3713 (300W)	6	EACH	21.2	127.2	T:\Standards\Towers\TTS\DG\Fabrication\T	

							SDG6DC-M01-00.dwg	
3.9	TSDG6DD	L 64x64x6x3480 (300W)	6	EACH	19.9	119.4	T:\Standards\Towers\TTS\DG\Fabrication\TSDG6DD-M01-00.dwg	
3.10	TSDG6DE	L 64x64x6x3393 (300W)	6	EACH	19.4	116.4	T:\Standards\Towers\TTS\DG\Fabrication\TSDG6DE-M01-00.dwg	
3.11	TSLEXLT1	HSS 168 ODx 10 x 5836 LEG WELD'T	2	EACH	261.4	522.8	21LE0003-M09-01R05	
3.12	TSLEXTS	HSS 168 OD x 10 x 5836 mm LEG WELD'T	1	EACH	261.4	261.4	21LE0003-M13-01R03	
3.13	TSSH02	BAR 64 x 6 x 64 (300W)	9	EACH	0.0	0.4	21SH0002-M01-01R00	
Section 4								
4	TS-5TCXB	Transition Section Leg HSS 141 ODx10 to HSS 168x10	1				21SA0129-E01-01R01	
4.1	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	81	EACH	0.0	0.0		
4.2	110210	7/8" (22.2mm) F-436 FLATWASHER - HDG	25	EACH	0.0	0.0		
4.3	110510	5/8" LOCKNUT PIN TYPE	45	EACH	0.0	0.0		
4.4	110512	7/8" LOCKNUT PIN TYPE	25	EACH	0.0	0.0		
4.5	110654	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG	45	EACH	0.0	0.0		
4.6	110962	BOLT ONLY 7/8" x 3-3/4" (22 x 95mm) A325 - HDG	25	EACH	0.0	0.0		
4.7	111171	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)	15	EACH	0.5	7.5		
4.8	TSDG5CC	L 64x64x5x3224 (300W)	6	EACH	15.4	92.4	21DG0005-M27-01R01	
4.9	TSDG5CD	L 64x64x5x2990 (300W)	6	EACH	14.2	85.2	21DG0005-M28-01R00	
4.10	TSDG5CE	L 64x64x5x2926 (300W)	6	EACH	14.0	84.0	21DG0005-M29-01R01	
4.11	TSLETT	HSS 141 OD x 10 x 5836 LEG	2	EACH	209.5	419.0	21LE0003-M09-	

	A	WELD'T					01R05	
4.12	TSLETT S	HSS 141 OD x 10 x 5836 mm LEG WELD'T	1	EACH	209.5	209.5	21LE0003-M13- 01R03	
4.13	TSSH02	BAR 64 x 6 x 64 (300W)	9	EACH	0.0	0.4	21SH0002-M01- 01R00	

Section 5

5	1795T1 A	HSS 141 ODx6x 5836 LEG WELD'T	1	EACH	174.5	174.5	T:\Projects\2010\10- 0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M01-02-00.dwg	
6	1795T1 B	HSS 141 ODx6x 5836 LEG WELD'T	1	EACH	174.5	174.5	T:\Projects\2010\10- 0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M01-03-00.dwg	
7	1795T1 C	HSS 141 ODx6x 5836 LEG WELD'T	1	EACH	174.5	174.5	T:\Projects\2010\10- 0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M01-04-00.dwg	
8	1795T1 D	L 51x51x5x2487 (300W)	6	EACH	9.5	57.0	T:\Projects\2010\10- 0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M01-05-00.dwg	
9	1795T1 E	L 51x51x5x2247 (300W)	6	EACH	7.7	46.2	T:\Projects\2010\10- 0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine	

							Tower\Fabrication Drawings\10-0795-M01-06-00.dwg	
10	1795T1 F	L 51x51x5x2097 (300W)	6	EACH	8.2	49.2	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-M01-07-00.dwg	
11	1795T1 G	L 51x51x5x2040 (300W)	6	EACH	7.7	46.2	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-M01-08-00.dwg	
12	TSSH02	BAR 64 x 6 x 64 (300W)	12	EACH	0.0	0.5	21SH0002-M01-01R00	
13	111171	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)	15	EACH	0.5	7.5		
14	110654	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG	65	EACH	0.0	0.0		
15	110510	5/8" LOCKNUT PIN TYPE	65	EACH	0.0	0.0		
16	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	65	EACH	0.0	0.0		
17	110960	BOLT ONLY 7/8" x 3-1/4" (22 x 83mm) A325 - HDG	19	EACH	0.0	0.0		
18	110512	7/8" LOCKNUT PIN TYPE	19	EACH	0.0	0.0		
19	110210	7/8" (22.2mm) F-436 FLATWASHER - HDG	19	EACH	0.0	0.0		
Section 6								
20	1795T2 A	HSS 114 ODx6x5836 LEG WELD'T	1	EACH	112.2	112.2	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-	

							M02-01-00.dwg	
21	1795T2 B	HSS 114 ODx6x5836 LEG WELD'T	2	EACH	112.2	224.4	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M02-02-00.dwg	
22	TSSH02	BAR 64 x 6 x 64 (300W)	12	EACH	0.0	0.5	21SH0002-M01-01R00	
23	1795T2 G	L 89x89x6x622 (300W)	3	EACH	5.5	16.5	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M02-07-00.dwg	
24	1795T2 F	L 51x51x6x1542 (300W)	6	EACH	7.7	46.2	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M02-06-00.dwg	
25	1795T2 E	L 51x51x6x1568 (300W)	6	EACH	7.7	46.2	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M02-05-00.dwg	
26	1795T2 D	L 51x51x6x1654 (300W)	6	EACH	8.2	49.2	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M02-04-00.dwg	
27	1795T2	L 51x51x6x1889 (300W)	6	EACH	10.0	60.0	T:\Projects\2010\10-	

	C						0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795- M02-03-00.dwg	
28	110654	BOLT ONLY 5/8" x 2" (16 x 51mm) A325 - HDG	65	EACH	0.0	0.0		
29	110510	5/8" LOCKNUT PIN TYPE	65	EACH	0.0	0.0		
30	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	65	EACH	0.0	0.0		
31	110961	BOLT ONLY 7/8" x 3-1/2" (22 x 89mm) A325 - HDG	19	EACH	0.0	0.0		
32	110512	7/8" LOCKNUT PIN TYPE	19	EACH	0.0	0.0		
33	110210	7/8" (22.2mm) F-436 FLATWASHER - HDG	19	EACH	0.0	0.0		
34	111171	5/8"x 7" LADDER STEP BOLT ASSEMBLY(2 NUTS & 1FW)	15	EACH	0.5	7.5		
Installation Drawings								
35	DWG-E	ERECTION DRAWING PACKAGE	1	EACH	0.0	0.0		
Name Plate Material								
36	NAMEP L	TURRIS NAME PLATE	1	EACH	0.1	0.1		
					Total Wt:	6391.5		



Project No.: 12-0494 Rel.05

Bill of Materials - Material List

Description: Tower Accessories Material- Tower 1

Customer: Seaforth Energy Inc

Site: Goldboro NS

Date: SEP 06, 2012

Line #	Part No.	Description	Qty. Req'd	Units of Measure	Unit WT (kg)	Total WT (kg)	Drawing Number	Comments
Tilt-up Platform Material								
1	WP020	L 51x51x3x2040 WELD'T (305 FACE WIDTH)	1	EACH	26.3	26.3	11WA0003-M01-01R01	
2	140050	SHACKLE 3/8"(9.5mm) BOLT TYPE GALV.1TON (12K ULTIMATE STR-G 2130)	4	EACH	0.2	0.6		
3	WP012	L 127x127x10x160 (300W)	1	EACH	2.7	2.7	11WA0002-M01-01R00	
4	WP011	L 152x152x10x150 (300W)	1	EACH	2.7	2.7	11WA0001-M01-01R01	
5	1795T3B	L 127x127x8x1409 (300W)	1	EACH	22.7	22.7	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-M03-02-00.dwg	
6	1795T3A	L 102x102x6x1690 (300W)	2	EACH	17.7	35.4	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-M03-01-00.dwg	
7	7431T11C	L 89x89x6x160 (300W)	2	EACH	1.5	2.9	T:\Projects\2007\07-0431_Atlantic Orient	

							Canada_Pennsylvania\Fabrication Drawings\07-0431-M11-01-00.dwg	
8	1795T10	3/8" AIRCRAFT CABLE c/w MECHANICAL SPLICE BOTH ENDS 1830mm	2	EACH	0.0	0.0		
9	110011	5/8" x 2" (15.9 x 51mm) A325 BOLT ASS'Y - HDG	5	EACH	0.2	0.9		
10	110012	5/8" x 2-1/4" (15.9 x 57mm) A325 BOLT ASS'Y - HDG	10	EACH	0.2	2.0		
11	110510	5/8" LOCKNUT PIN TYPE	15	EACH	0.0	0.0		
12	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	15	EACH	0.0	0.0		
13	110146	5/8" (15.9mm)-11 HEX NUT - 2H HDG	8	EACH	0.1	1.0		
14	110003	1/2" x 1-3/4" (12.7 x 45mm) A325 BOLT ASS'Y - HDG	10	EACH	0.1	1.0		
15	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	8	EACH	0.0	0.0		
16	1795T12	HSS 25x3x70 (300W)	3	EACH	0.2	0.6		
17	1795T11	5/8" Rod x520 (30mm TREADED BOTH END)	1	EACH	1.0	1.0		
18	110143	1/2" (12.7mm)- HEX NUT - 2H-HDG	6	EACH	0.1	0.4		
19	7431T21	NEOPRENE PAD 76x6x200	1	EACH	0.0	0.0		
20	142303	TURNBUCKLE 1/2 x 9" J&E GALV.(11k ULTIMATE STRENGTH)	2	EACH	0.8	1.6		
21	110189	3/8" RING FILL (10mm) LG HDG 1/2 TO 3/4 BOLT	4	EACH	0.0	0.1		
22	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	4	EACH	0.0	0.0		
23	110143	1/2" (12.7mm)- HEX NUT - 2H-HDG	4	EACH	0.1	0.3		
Safety Cable Material								
24	110007	1/2" x 2-3/4" (12.7 x 70mm) A325 BOLT ASS'Y - HDG	5	EACH	0.1	0.6		

25	110005	1/2" x 2-1/4" (12.7 x 57mm) A325 BOLT ASS'Y - HDG	5	EACH	0.1	0.6		
26	110004	1/2" x 2" (12.7 x 51mm) A325 BOLT ASS'Y - HDG	5	EACH	0.1	0.5		
27	110260	U-BOLT ASSY 1/2x5-1/16" (12.7 x 129mm) C/C	4	EACH	0.9	3.5		
28	110459	3/8"x1" (10x25mm) BOLT ASS'Y GR.5 H.D.G.	8	EACH	0.0	0.0		
29	110146	5/8" (15.9mm)-11 HEX NUT - 2H HDG	6	EACH	0.1	0.7		
30	160414	1/2"x9" (12.7 x 229mm) RH JAW	1	EACH	0.0	0.0		
31	HC-12	1/2" (12.7mm) HOSE CLAMP	1	EACH	0.0	0.0		
32	140003	U-BOLT CLIP 3/8" (9.5mm) GALV.	2	EACH	0.0	0.0		
33	140073	THIMBLE STANDARD 3/8" (9.5mm) GALV.	1	EACH	0.0	0.0		
34	110581	1/2" LOCKNUT PIN TYPE	3	EACH	0.0	0.0		
35	110143	1/2" (12.7mm)- HEX NUT - 2H- HDG	6	EACH	0.1	0.4		
36	110203	1/2 Lock washer (Spring) Galv	8	EACH	0.0	0.0		
37	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	5	EACH	0.0	0.0		
38	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	7	EACH	0.0	0.0		
39	161005	3/8" AIRCRAFT CABLE ASS'Y 38m	1	EACH	20.0	20.0		
40	160601	DIE SPRING 25mm HOLE MED. H. DUTY	1	EACH	0.0	0.0		
41	160427	CABLE GUIDE	5	EACH	0.0	0.0		
42	160401	RAM SAFETY SLEEVE CW CARABINER	1	EACH	0.0	0.0		
43	161000	CARABINER (NK525)	1	EACH	0.0	0.0		
44	TCS014A	L 127x89x13x138 (300W)	1	EACH	3.8	3.8	11CS0003-M01-01R00	
45	TCS014B	L 127x89x13x51 (300W)	2	EACH	1.1	2.2	11CS0003-M01-01R00	
46	TCS016	L 102x102x13x228 (300W)	2	EACH	4.8	9.5	11CS0005-M01-01R01	



Project No.: 12-0494 Rel.05

47	TCS017	BAR 64x16x507 (300W)	1	EACH	4.1	4.1	11CS0006-M01-01R00	
48	TCS019	L 51x51x5x190 (300W)	5	EACH	1.0	5.0	11CS0008-M01-01R00	
49	TCS020	BENT PL 339x10x435 (300W)	1	EACH	10.0	10.0	11CS0009-M01-01R00	
50	TCS021	BENT BAR 127x13x488 (300W)	1	EACH	6.4	6.4	11CS0010-M01-01R00	
51	191003	THD ROD 5/8"x1' (16 x 305mm)	4	EACH	0.7	2.8		
52	110088	3/8" x1in (9.5x25) BOLT ASS'Y GR5-HDG	12	EACH	0.0	0.2		

Anemometer Boom Material

53	1795T4A	L 102x102x6x219 (300W)	2	EACH	2.0	4.0	12-0494-M02-01R00	
54	110272	U-BOLT ASSY 5/8x6-1/4" (15.9 x 159mm) C/C	4	EACH	2.0	7.9		
					Total Wt:	184.6		

**Bill of Materials - Material List****Description: Tower Accessories Material- Tower 2****Customer: Seaforth Energy Inc****Site: Goldboro NS****Date: SEP 06, 2012**

Line #	Part No.	Description	Qty. Req'd	Units of Measure	Unit WT (kg)	Total WT (kg)	Drawing Number	Comments
Tilt-up Platform Material								
1	WP020	L 51x51x3x2040 WELD'T (305 FACE WIDTH)	1	EACH	26.3	26.3	11WA0003-M01-01R01	
2	140050	SHACKLE 3/8"(9.5mm) BOLT TYPE GALV.1TON (12K ULTIMATE STR-G 2130)	4	EACH	0.2	0.6		
3	WP012	L 127x127x10x160 (300W)	1	EACH	2.7	2.7	11WA0002-M01-01R00	
4	WP011	L 152x152x10x150 (300W)	1	EACH	2.7	2.7	11WA0001-M01-01R01	
5	1795T3B	L 127x127x8x1409 (300W)	1	EACH	22.7	22.7	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-M03-02-00.dwg	
6	1795T3A	L 102x102x6x1690 (300W)	2	EACH	17.7	35.4	T:\Projects\2010\10-0795_MaManna Renewable Energy_New Glasgow NS_E&F 35m TTS Wind Turbine Tower\Fabrication Drawings\10-0795-M03-01-00.dwg	
7	7431T11C	L 89x89x6x160 (300W)	2	EACH	1.5	2.9	T:\Projects\2007\07-0431_Atlantic Orient	



							Canada_Pennsylvania\Fabrication Drawings\07-0431-M11-01-00.dwg	
8	1795T10	3/8" AIRCRAFT CABLE c/w MECHANICAL SPLICE BOTH ENDS 1830mm	2	EACH	0.0	0.0		
9	110011	5/8" x 2" (15.9 x 51mm) A325 BOLT ASS'Y - HDG	5	EACH	0.2	0.9		
10	110012	5/8" x 2-1/4" (15.9 x 57mm) A325 BOLT ASS'Y - HDG	10	EACH	0.2	2.0		
11	110510	5/8" LOCKNUT PIN TYPE	15	EACH	0.0	0.0		
12	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	15	EACH	0.0	0.0		
13	110146	5/8" (15.9mm)-11 HEX NUT - 2H HDG	8	EACH	0.1	1.0		
14	110003	1/2" x 1-3/4" (12.7 x 45mm) A325 BOLT ASS'Y - HDG	10	EACH	0.1	1.0		
15	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	8	EACH	0.0	0.0		
16	1795T12	HSS 25x3x70 (300W)	3	EACH	0.2	0.6		
17	1795T11	5/8" Rod x520 (30mm TREADED BOTH END)	1	EACH	1.0	1.0		
18	110143	1/2" (12.7mm)- HEX NUT - 2H- HDG	6	EACH	0.1	0.4		
19	7431T21	NEOPRENE PAD 76x6x200	1	EACH	0.0	0.0		
20	142303	TURNBUCKLE 1/2 x 9" J&E GALV.(11k ULTIMATE STRENGTH)	2	EACH	0.8	1.6		
21	110189	3/8" RING FILL (10mm) LG HDG 1/2 TO 3/4 BOLT	4	EACH	0.0	0.1		
22	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	4	EACH	0.0	0.0		
23	110143	1/2" (12.7mm)- HEX NUT - 2H- HDG	4	EACH	0.1	0.3		
Safety Cable Material								
24	110007	1/2" x 2-3/4" (12.7 x 70mm) A325 BOLT ASS'Y - HDG	5	EACH	0.1	0.6		

25	110005	1/2" x 2-1/4" (12.7 x 57mm) A325 BOLT ASS'Y - HDG	5	EACH	0.1	0.6		
26	110004	1/2" x 2" (12.7 x 51mm) A325 BOLT ASS'Y - HDG	5	EACH	0.1	0.5		
27	110260	U-BOLT ASSY 1/2x5-1/16" (12.7 x 129mm) C/C	4	EACH	0.9	3.5		
28	110459	3/8"x1" (10x25mm) BOLT ASS'Y GR.5 H.D.G.	8	EACH	0.0	0.0		
29	110146	5/8" (15.9mm)-11 HEX NUT - 2H HDG	6	EACH	0.1	0.7		
30	160414	1/2"x9" (12.7 x 229mm) RH JAW	1	EACH	0.0	0.0		
31	HC-12	1/2" (12.7mm) HOSE CLAMP	1	EACH	0.0	0.0		
32	140003	U-BOLT CLIP 3/8" (9.5mm) GALV.	2	EACH	0.0	0.0		
33	140073	THIMBLE STANDARD 3/8" (9.5mm) GALV.	1	EACH	0.0	0.0		
34	110581	1/2" LOCKNUT PIN TYPE	3	EACH	0.0	0.0		
35	110143	1/2" (12.7mm)- HEX NUT - 2H- HDG	6	EACH	0.1	0.4		
36	110203	1/2 Lock washer (Spring) Galv	8	EACH	0.0	0.0		
37	110202	1/2" (12.7mm) F-436 FLATWASHER - HDG	5	EACH	0.0	0.0		
38	110205	5/8" (15.9mm) F-436 FLATWASHER - HDG	7	EACH	0.0	0.0		
39	161005	3/8" AIRCRAFT CABLE ASS'Y 38m	1	EACH	20.0	20.0		
40	160601	DIE SPRING 25mm HOLE MED. H. DUTY	1	EACH	0.0	0.0		
41	160427	CABLE GUIDE	5	EACH	0.0	0.0		
42	160401	RAM SAFETY SLEEVE C/W CARABINER	1	EACH	0.0	0.0		
43	161000	CARABINER (NK525)	1	EACH	0.0	0.0		
44	TCS014A	L 127x89x13x138 (300W)	1	EACH	3.8	3.8	11CS0003-M01- 01R00	
45	TCS014B	L 127x89x13x51 (300W)	2	EACH	1.1	2.2	11CS0003-M01- 01R00	



Project No.: 12-0494 Rel.06

46	TCS016	L 102x102x13x228 (300W)	2	EACH	4.8	9.5	11CS0005-M01-01R01	
47	TCS017	BAR 64x16x507 (300W)	1	EACH	4.1	4.1	11CS0006-M01-01R00	
48	TCS019	L 51x51x5x190 (300W)	5	EACH	1.0	5.0	11CS0008-M01-01R00	
49	TCS020	BENT PL 339x10x435 (300W)	1	EACH	10.0	10.0	11CS0009-M01-01R00	
50	TCS021	BENT BAR 127x13x488 (300W)	1	EACH	6.4	6.4	11CS0010-M01-01R00	
51	191003	THD ROD 5/8"x1' (16 x 305mm)	4	EACH	0.7	2.8		
52	110088	3/8" x1in (9.5x25) BOLT ASS'Y GR5-HDG	12	EACH	0.0	0.2		
Anemometer Boom Material								
53	1795T4A	L 102x102x6x219 (300W)	2	EACH	2.0	4.0	12-0494-M02-01R00	
54	110272	U-BOLT ASSY 5/8x6-1/4" (15.9 x 159mm) C/C	4	EACH	2.0	7.9		
					Total Wt:	184.6		



Project No.: 12-0494 Rel.07

Bill of Materials - Material List

Description: Extra Grounding Material Tower 1 & 2

Customer: Seaforth Energy Inc

Site: Goldboro NS

Date: SEP 06, 2012

Line #	Part No.	Description	Qty. Req'd	Units of Measure	Unit WT (kg)	Total WT (kg)	Drawing Number	Comments
Extra Grounding Material Tower 1 & 2								
1	150032	WELD METAL #90 (BUR90)	6	EACH	0.0	0.0		
					Total Wt:	0.0		

