REGIONE BASILICATA
PROVINCIA DI POTENZA
Comuni di :
Castelgrande - Muro Lucano - Rapone - San Fele
LOCALITA' "Toppo Macchia"

PROGETTO DEFINITIVO PER LA REALIZZAZIONE DI UN IMPIANTO DI PRODUZIONE DI ENERGIA ELETTRICA DA FONTE EOLICA E RELATIVE OPERE DI CONNESSIONE - 16 AEROGENERATORI (potenza totale 88,2 MW)

Sezione A :
PROGETTO DEFINITIVO DELL'IMPIANTO, DELLE OPERE CONNESSE E DELLE INFRASTRUTTURE INDISPENSABILI

Titolo elaborato:
A.11 - RELAZIONE PRELIMINARE SULLE STRUTTURE

N. Elaborato: A.11.1 Scala: -

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INTRODUZIONE

Lo studio contenuto nella presente relazione ha lo scopo di dare le prime indicazioni di calcolo sull'opera che si andrà a realizzare.

Dei sedici aerogeneratori in progetto, 3 ricadono in comune di Castelgrande (contrassegnati dal codice B01, B02, B03), 2 in comune di San Fele (B04 e B05) mentre tutti gli altri ricadono in comune di Muro Lucano.
La potenza complessiva nominale di 88,2 MW è raggiunta con l'installazione di 15 aerogeneratori Vestas V150 (di altezza al mozzo pari a 105 m e diametro rotore 150 m) da 5,6 MW e 1 aerogeneratore Vestas V136 (di altezza al mozzo pari a 112 m e diametro rotore 136 m) da 4,2 MW (turbina codice B14), con modulo di trasformazione MT/BT inserito nella base della torre.

Si sottolinea che, le indicazioni tecniche degli aerogeneratori descritti sono indicative a due sole tipologie di prodotto in commercio e pertanto sono da intendersi qualitative. Fermo restando gli impatti ambientali è possibile che sia scelto, per l'esecuzione dell'opera, una tecnologia differente.

Nel presente studio i dati e i riferimenti di calcolo riportati sono quelli forniti dalla casa costruttrice Vestas.

Si allega al progetto un allegato grafico riportante l'armatura e la distinta ferri di una fondazione del tipo plinto diretto che si prevede di dimensioni uguali per eltrambi i modelli di aerogeneratori di progetto.

Si precisa che la tipologia di fondazione e le dimensioni della stessa verranno definite in fase di progettazione escutiva.

Construction of gravity foundation

Document no.: 0005-8491 V14
Class: RESTRICTED
Type: T09
Date: 2018-03-10

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Wind turbine type

Read the full document before you start to do work.

Send questions or concerns about the document to Vestas Wind Systems A/S.

Wind turbine type	Mk version
All	

Change description

Description of changes
Updated section 2 *Abbreviations and technical terms*, page 4, section 8.4 *Assembly and installation of anchor cage*, page 9, and section 8.9 *Grouting and levelling*, page 25.

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1 Safety

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All work relating to a Vestas wind turbine, including work methods and practices, employee training and protective measures, and use of tools and equipment, shall be in accordance with the requirements of the applicable governmental and private occupational safety and health codes and standards. Employers engaged in such work are also required to be familiar with and comply with the wind turbine-specific 'Safety regulations for operators and technicians' manual for the relevant wind turbine type. Vestas shall not be responsible for any liabilities arising from failure to comply with such requirements. Vestas reserves the right to inspect such work to ascertain such compliance.

The service technician must read and understand the PPE sheets for each of the chemicals used or work done in this instruction. The PPE sheets describe the correct personal protective equipment to wear for the specific work. If in doubt about the PPE requirements for the work, contact the site responsible or the line manager and confirm the correct procedure before starting the work.

Read the full document before you start to do work.

2 Abbreviations and technical terms

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Table 2.1: Abbreviations

Abbreviation	Explanation
PPE	Personal protective equipment
LDF	Load distribution flange
SDS	Safety data sheet
SWI	Service work instruction
SIF	Service inspection form
SWMS	Safe work method statement

Table 2.2: Explanation of terms

Term	Explanation
None	

3 Reference documentation

3.1 Safety documents

0011379839

Table 3.1: Safety documents

Document No.	Title
Various	Safety regulations for operators and technicians
0001-0410	Personal protective equipment sheets
	Relevant SDSs for the chemicals used in this document

3.2 Reference documents

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Table 3.2: Reference documents

Document No.	Title
0043-9388	Requirement specifications
0046-9182	3rd Party foundation designer guideline
0018-0710	SWI: Grouting of anchor cage
0045-7720	SIF: Grouting of anchor cage
0046-9189	SIF: Foundation construction
0009-1539	Final tensioning of foundation anchor bolts
0045-8717	SWI: Sealing of foundation top
0045-8646	SWI: Levelling of load distribution flange
0018-0743	SWI: Assembly and installation of anchor cage
0016-7148	SIF: Assembly and installation of anchor cage
0040-6657	Geotechnical guideline
0019-2575	Foundation earthing work description of foundation earthing on anchor cage foundation
0042-8101	Cable ducting
0061-5844	Vertical assembly and installation of 4-segment anchor cage
0061-5848	Vertical assembly of the 2-segment anchor cage with LDF
0061-6683	Vertical assembly and installation of 2-segment anchor cage
	Anchor cage approval drawing
	Foundation approval drawing

4 Purpose

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The purpose of this document is to describe the process for constructing a gravity foundation.

5 Estimated time use

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Duration of the works is highly dependent on soil conditions, climate conditions, size of the foundation, number and make of plant and equipment employed, and competencies of the supervision and workers used. Expect between 2 to 4 weeks.

6 Geotechnical investigations

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See 0040-6657 ‘Geotechnical guideline’ for information.

7 Structural design

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See 0040-6657 ‘Geotechnical guideline’ for information.

8 Construction procedure

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Foundation construction execution must conform to EN 13670: Execution of concrete structures. Vestas advise to adopt execution class 2, which entails the following:

- Visual inspection and systematic and regular measurements of major works.
- Self-inspection of all works in accordance to procedures and requirements.
- Inspection report required for all works with hold point operations.

8.1 Concrete production

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The concrete for the foundations can be delivered as ready mix, which means from stationary plants outside the site-boundary or from mobile batching plants set up in a strategic location inside the site boundary. For both options; the plants must be certified, ensuring that the constituent materials, plant, testing equipment and procedures etc. are in compliance to EN-206: Concrete specification. The mobile batching plant internal hoppers/weights must be calibrated every time it is assembled by a third party laboratory.

8.1.1 Cement

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Any portland cement (OPC) can be used, it is however advisable to procure a low-heat hydration cement type II, as the bulk of the foundation will produce a massive temperature rise. Maximum temperature should not exceed 70°C and the temperature gradient between the core and surface should be kept under 20°C. Replacing up to 35% of the cement with pozzolanic materials (fly ash, blast furnace slag or silica fume) will also reduce the heat hydration. The cement must be supplied from a certified plant and conform to EN 197: Cement.

8.1.2 Water

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Only potable water (drinking water) should be used for concrete production; however lake/river water may be used if third party laboratory certifies that the water is free from injurious substances, such as organic material, chlorides, oil, acid, and alkali. Furthermore the local environmental authorities must approve sourcing the water.

8.1.3 Aggregate

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Both coarse aggregate (crushed rock or gravel) and fine aggregate (sand) can be sourced within the site boundary from borrow pits pending approval from local environmental authorities.

Aggregates should be chemically inert, durable, limited porosity and free from adhering coatings, clay lumps and organic and other impurities that may cause corrosion of the reinforcement or may impair the strength and durability of the concrete. Sieve analysis must show that the aggregate are graded accordingly to propos.ed concrete mix design and conform to EN 12620: Aggregates for concrete.

The coarse aggregate must be free from friable, flaky and laminated pieces, including mica and shale.

8.1.4 Admixtures

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Chemical admixtures must conform to EN 934: Concrete admixtures. It is highly advisable to add a retarder to slow the hydration process down; this is to minimize temperature development and ensure a safety margin for cold joints forming in case of delayed batch delivery.

Super-plasticizer could also be needed to improve workability, especially if cement had been replaced with pozzolanic material. Depending on expos.ure class, air entrainment admixture should be utilized.

8.2 Excavation and blinding layer

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Excavator operation!

- Do not enter excavation pit while excavator is in operation.
- Contractor shall provide a detailed SWMS which is to give details of the method of excavation, precautions to prevent pit collapse, fencing around the pit, safe access and egress, PPE to be utilised and the process for reinstatement of the excavation.
- Shall be conducted under ‘Permit to Work’.

The excavation works must be planned in accordance to the geotechnical report. If the geotechnical report shows any different soil types, and any of these are planned for backfilling, these must be stored separately. The angle of the banks in the excavation pit has to be chosen according to the geotechnical report based on the soil conditions at site and the foundation drawings. This is to ensure safe working conditions.

When the excavation work has reached bearing stratum, caution must be taken to protect the upper layers of the soil from mechanical digging equipment, rain or surface water. Immediately after the final level of excavation is reached, it is recommended to concrete the blinding layer with a minimum of 100 mm low class concrete C12/15. For some soft or weak soil types, it may be necessary to arrange a reinforcement net in the blinding layer locally below the anchor cage adjustment feet to prevent punching and differential settlements.

If, by error, the level of excavation is below the expected level, or if a layer of poor soil has to be removed, a layer of compacted sand or low class concrete must be added to replace the soil.

The top level of the blinding layer at the centre of the excavation must be lower than the surrounding parts. This form can be achieved in two different ways:

1. Excavating to a constant level and using increased thickness of blinding layer outside the centre part, or;
2. Excavating to two different levels

The second possibility is preferable due to less material consumption.

The minimum area of the excavation pit shall make due allowances for any underground services, such as drains, formwork including supports and proper working space. It is recommended to expand the confines of the excavation pit for >1m from the concrete surface.

The contractor is responsible for keeping the pit dry during the entire period of construction. If the subsoil water level is close to or above the foundation level, then sufficient actions must be set in motion before foundation level is reached in order not to damage the bearing capacity of the foundation stratum. One or more interim pump sumps must be constructed and ensured to be monitored at all times.

Figure 8.1: Typical excavation process

Figure 8.2: Typical excavation process

If the subsoil water level is well below foundation level, then it is sufficient to place drainage ducts outside the concrete blinding layer to mitigate any surface water. This is to be pumped to a nearby watercourse or percolated away from the excavation pit.

All pumped water must adhere to local law and guidelines concerning silt quantity, and proper silt pollution control measures must be catered for, e.g. silt fences and/or silt busters.

8.3 Cable ducting

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See 0042-8101 Cable ducting for information.

8.4 Assembly and installation of anchor cage

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Table 8.1: Assembly and installation of anchor cage

Anchor cage type		Assembly (2-segment)	Assembly (4-segment)	Levelling of LDF
AC 1.0	Horizontal assembly	0018-0743	0037-6203	0045-8646
AC 1.5	Vertical assembly	0061-6683	0061-5844	-
AC 2.0	Vertical assembly	0061-5848	-	-

8.5 Reinforcement fixing

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Reinforcement bars (re-bars) and wire mesh must conform to EN 10080: Steel for reinforced concrete and only be supplied by a certified mill. All reinforcement should be deformed (ribbed) high-yield strength and in accordance to design.

Steel fixing

- Do not access the top reinforcement before it has been deemed safe against collapse.
- Avoid using temporary or permanent vertical straight bars without protective end caps.
- Contractor shall provide a detailed SWMS which is to give details of the method of cutting and bending the reinforcement, supplying and fixing the reinforcement, safe access and egress and PPE to be utilised.

Experienced and competent steel fitters must cut steel reinforcement from straight bars free of kinks and bends or other damage, and bend it cold. All bending dimensions shall be in accordance to specifications. All reinforcement shall be protected from damage and held free from dirt, rust scale, paint, oil or other foreign substances.

All reinforcement must be accurately placed and fixated using soft annealed tying wire, and retained at the right pos.ition in the foundation during the pouring of the concrete. Every second crossing of the reinforcement has to be tied together. The reinforcement shall maintain its pos. ition relative to its own members and shuttering during concrete casting.

The concrete coverage of the reinforcement should be in accordance with the specifications stated on the foundation drawings.

No reinforcement may be joined end to end using mechanical fasteners (bolted connections, clamps, etc.) or welded together at any time. No welding is allowed on any part of the reinforcement, not even for the purpos.e of fixation. This should be clearly stated on foundation drawings.

Tying wire and spacers must be made of materials that shall not harm the reinforcement steel and concrete.

8.5.1 Reinforcement under the anchor cage

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Prior to the installation of the anchor cage install the lower mesh pos. 13.2 directly on the blinding layer. The mesh is cut to a circular shape and openings are cut for cable guidance and adjustment feet of the anchor cage. In most cases a number of concentric rings pos. 5 have to be installed underneath the coming radial bars. Place these rings loose on top of the mesh together with the 2 rings pos. 12.2 and 12.3 and the Z-bars pos. 12.1.

As an alternative to cutting holes for the adjustment feet of the anchor cage consider to place the feet in advance in the correct position before the mesh, rings and Z-bars are installed.

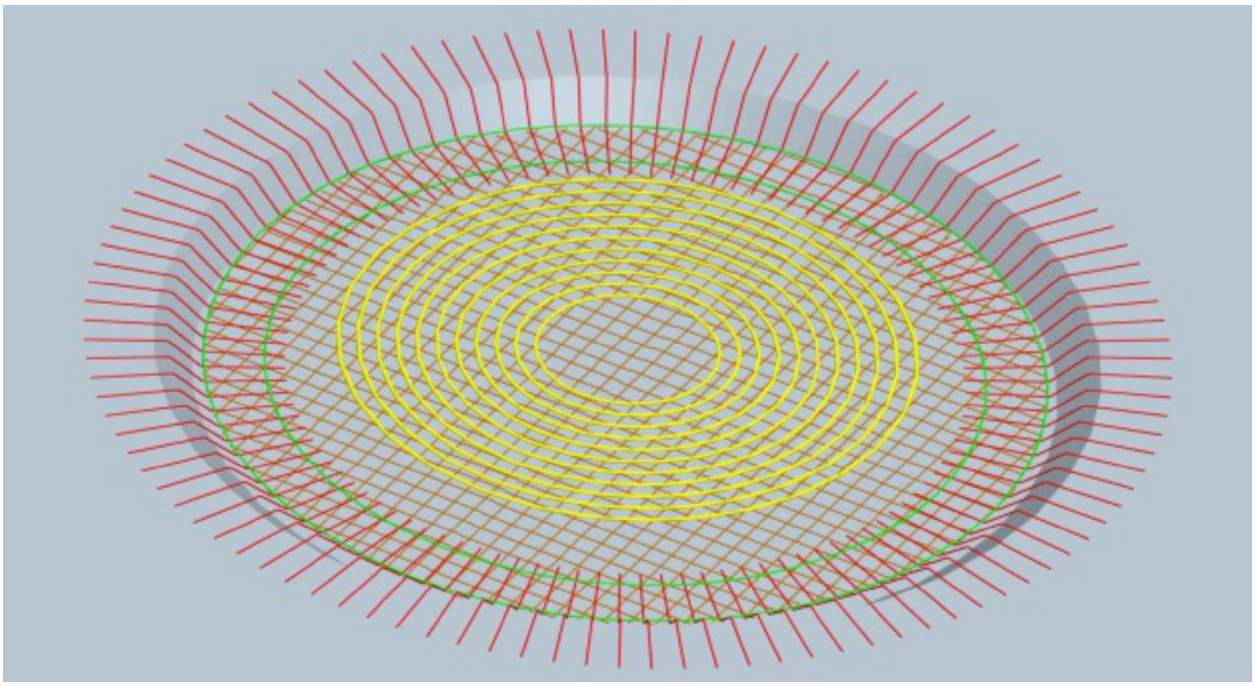

Figure 8.3: Reinforcement under anchor cage

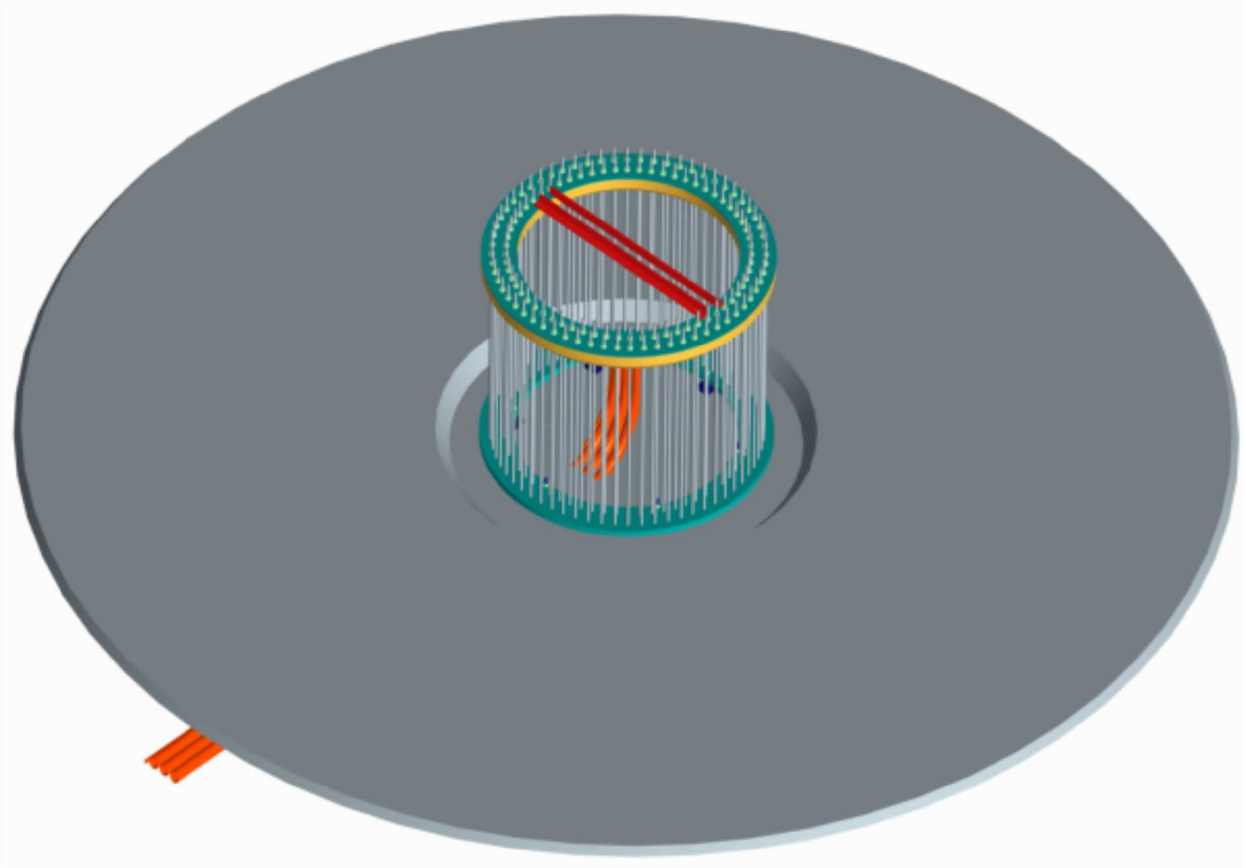

Figure 8.4: Anchor cage at centre of foundation. Reinforcement not shown

8.5.2 Lower bottom radial reinforcement

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The bottom radial reinforcement layer is installed on spacers located the correct distance from the blinding layer. It is allowed to install a few numbers of concentric rings below the radial bars to form a continuous support. The reinforcement bars are installed in a radial pattern using the anchor cage as a template.

Pos. 1.1 spans 0.5m from centre core to edge and is installed in every 4th anchor space, check cord distance on the foundation drawing. Pos. 1.2 is placed between pos. 1.1 and pos. 1.3 in the remaining spaces. Pos. 1.4 is located outside the anchor and for larger diameters pos. 1.5 is placed between each radial bar.

The concentric rings pos. 5 already placed on top of the lower mesh are installed underneath the radial bars.

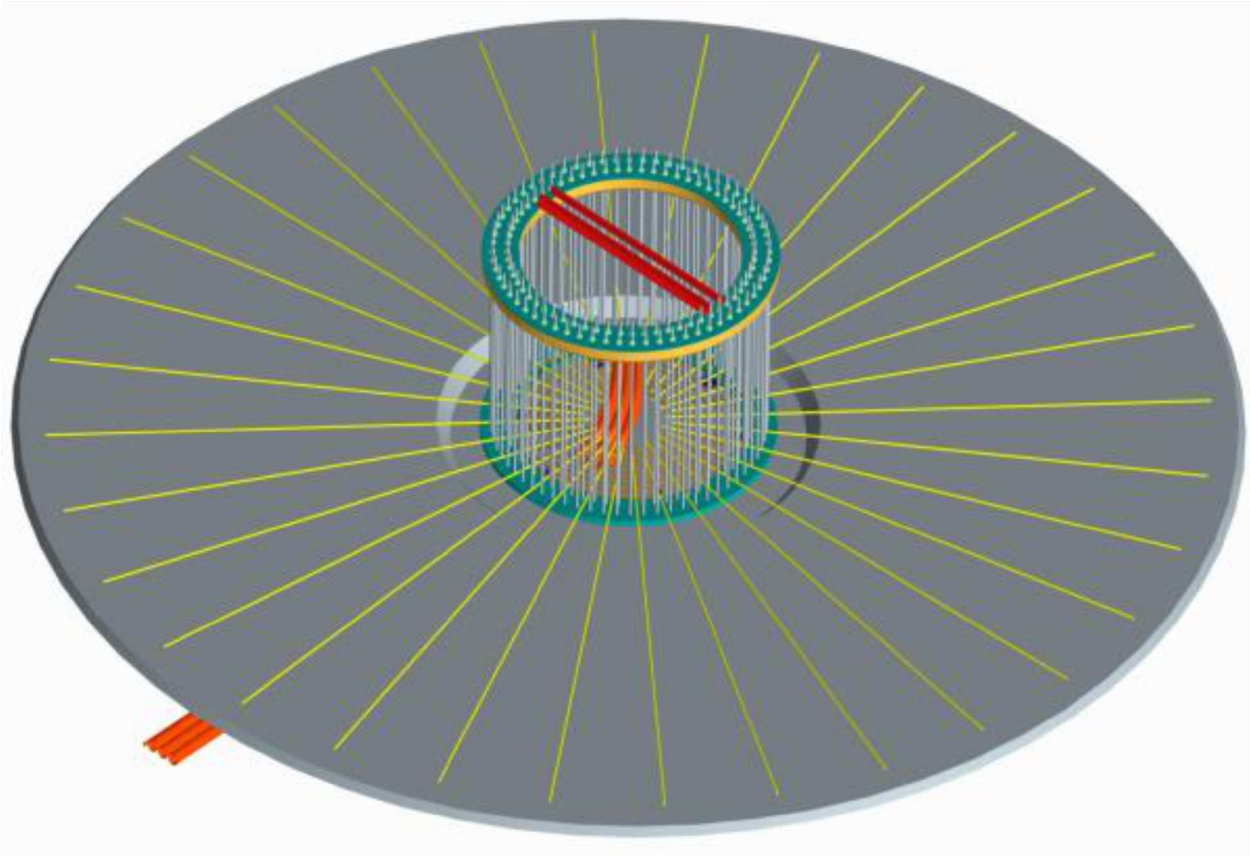

Figure 8.5: Every 4th radial reinforcement installed

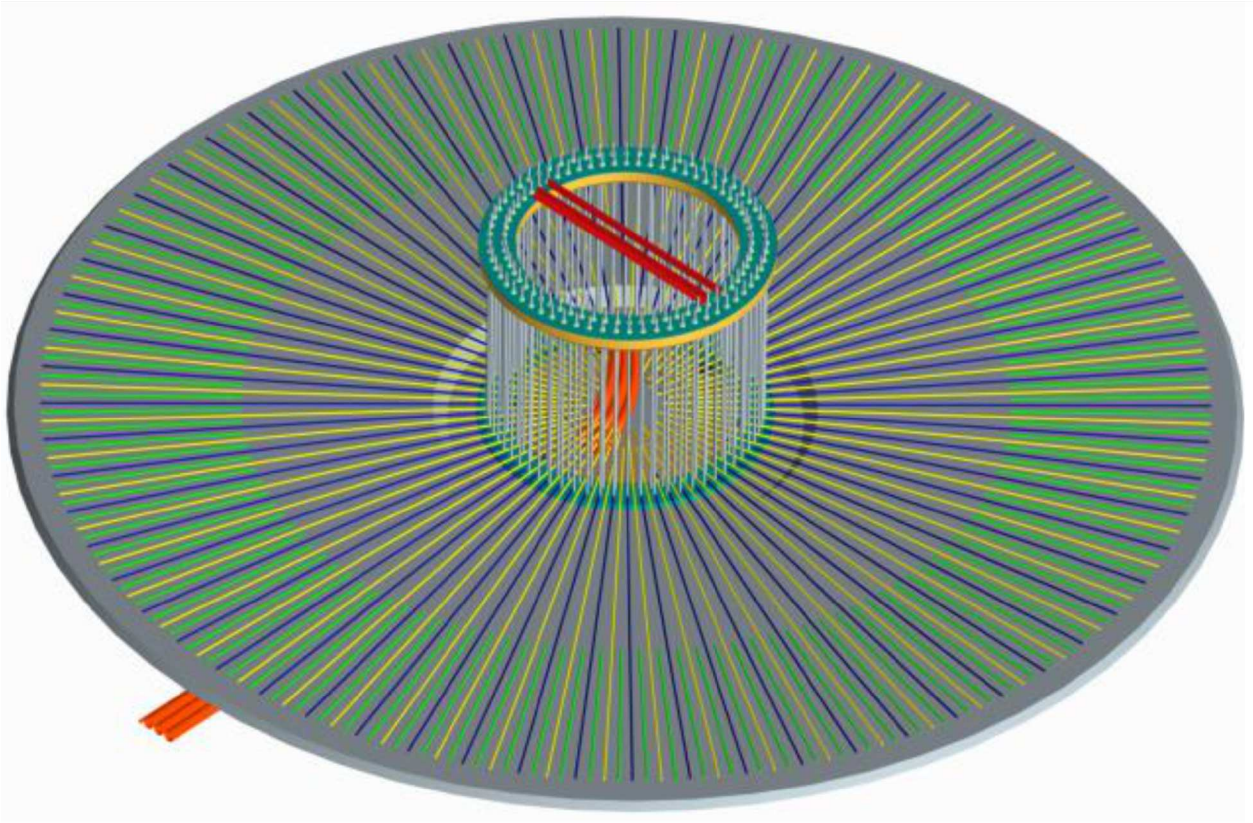

Figure 8.6: All main radial reinforcements installed

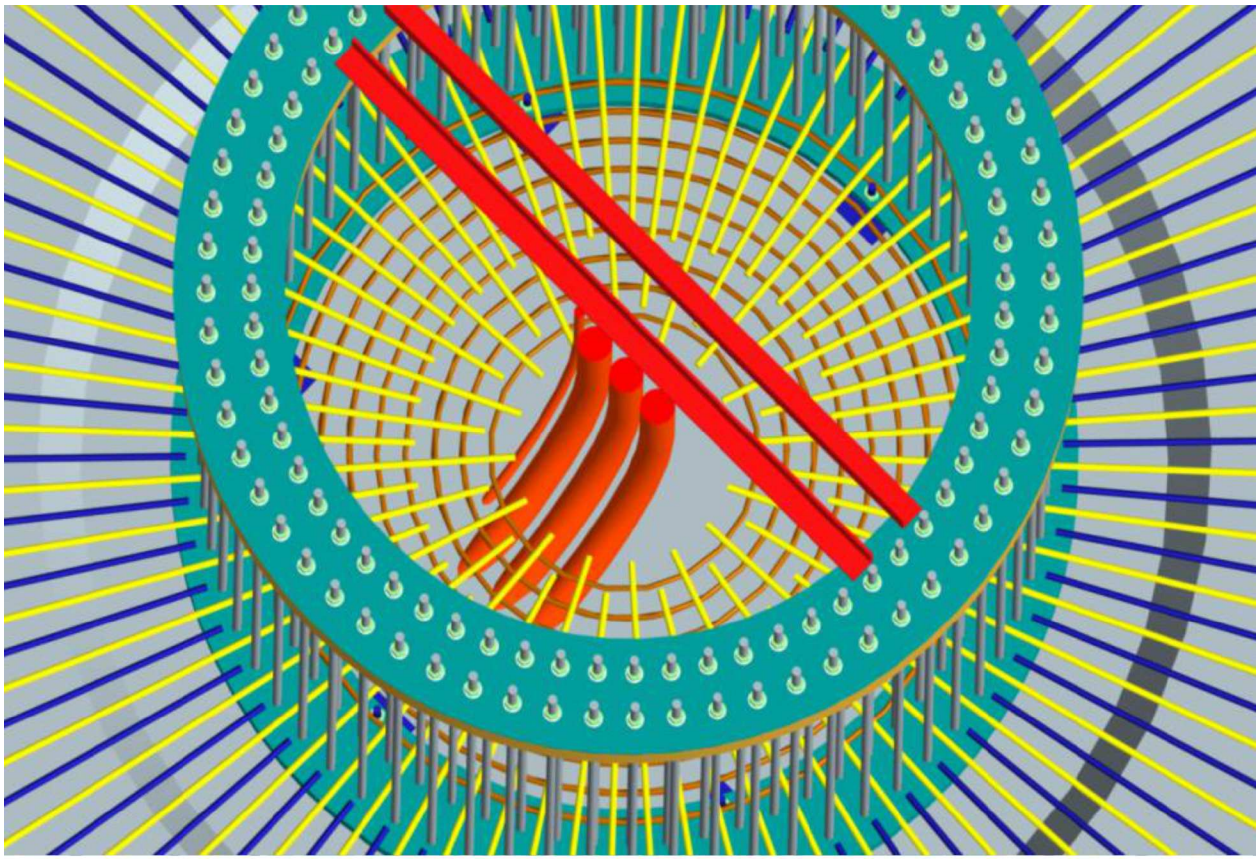

Figure 8.7: Detail of centre part

8.5.3 Lower bottom concentric reinforcement

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The bottom concentric reinforcement layer is installed on top of the radial layer inside and outside the anchor cage.

Additional radial bars pos. 1.6 are in some cases required above the main radial bars where they pass the anchors. If required, they are specified on the foundation drawing.

Note that concentric bars inside the anchor cage in some cases are both below and above the radial bars. Bars below are lifted and fastened to the radial bars.

It is allowed to arrange the concentric reinforcement pos. 3 and 4 as spirals having the same spacing as the concentric rings.

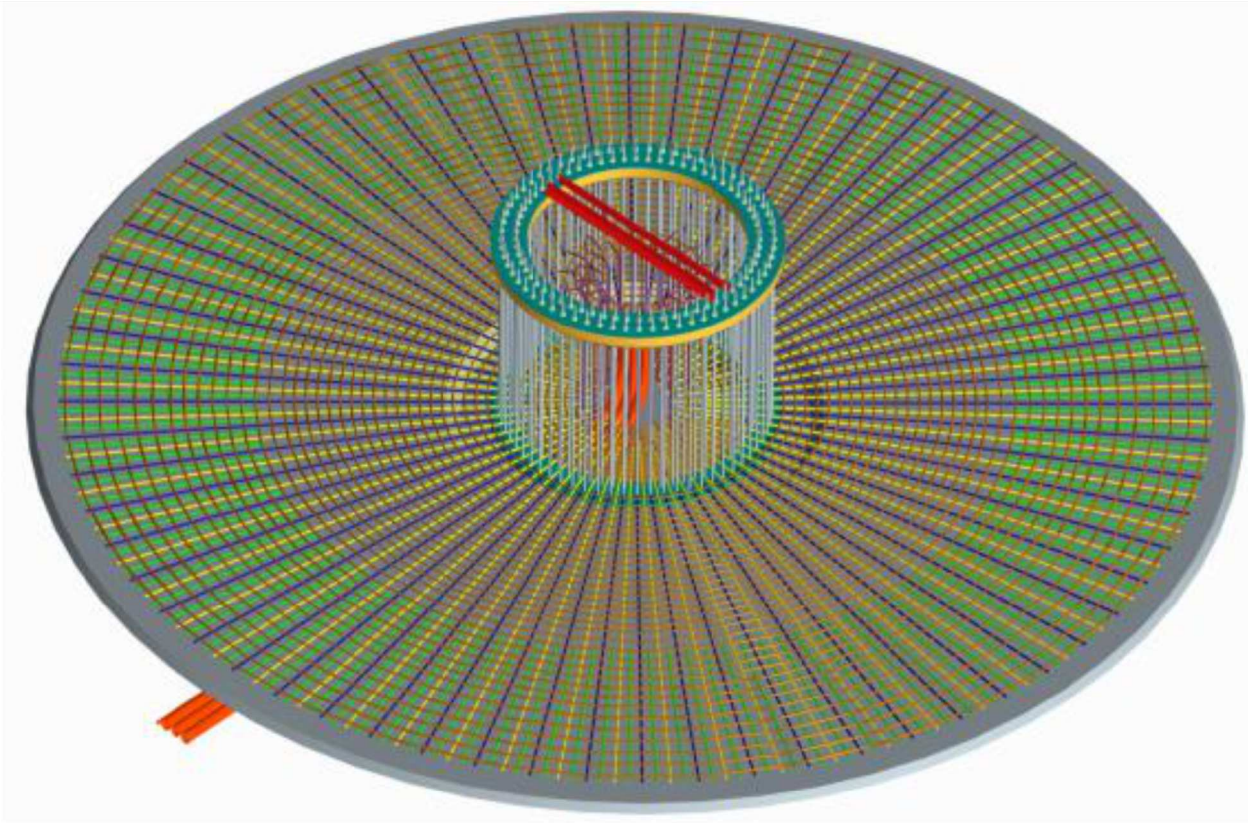

Figure 8.8: Concentric rings installed

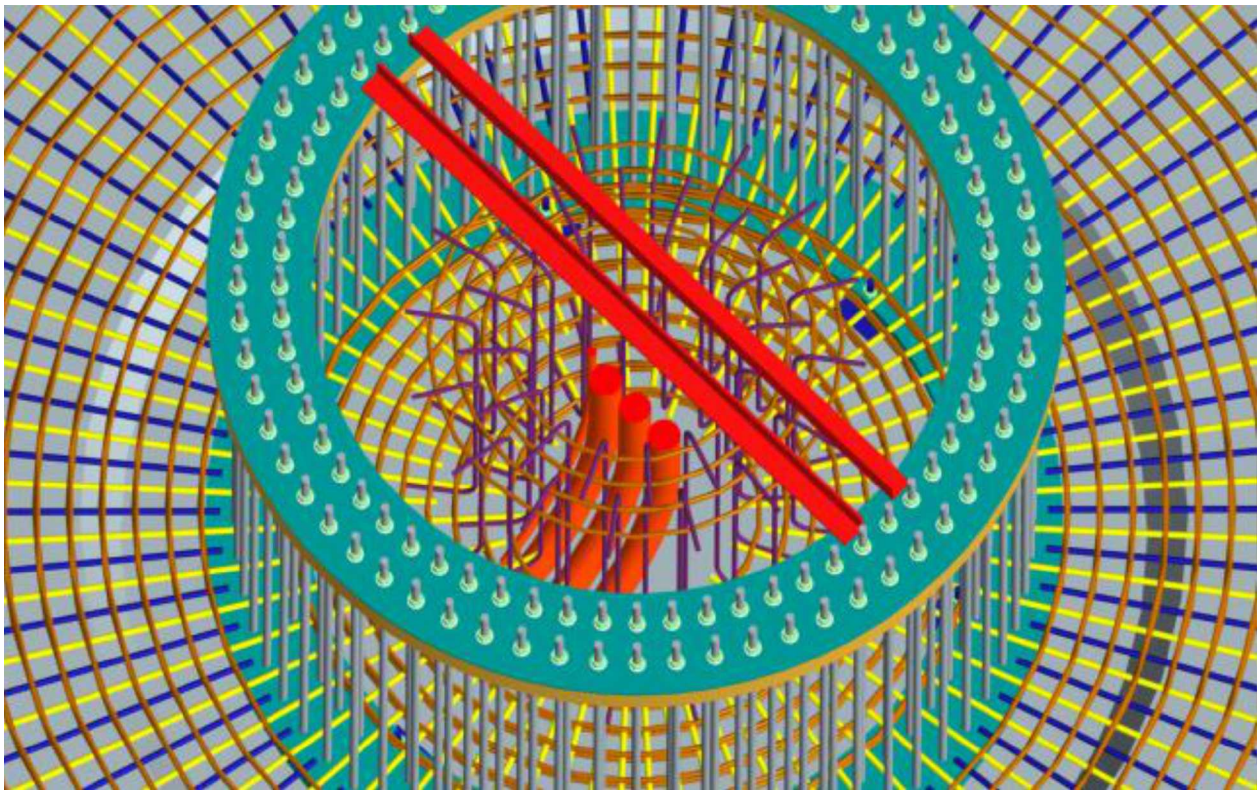

Figure 8.9: Detail of centre part

For the concentric rings inside the cage; the rings below the radial bars are lifted and joined to the matching rings above the radial bars. Continue this until the ring which defines the location of the outer row of C-bar pos. 8.1.2. The start of the bend of the horizontal leg of the C-bars is to match the concentric ring. Attach the outer row of C-bars to radial bars pos. 1.2. The C-bars are held in pos.ition by installing some of the upper concentric rings pos. 6.1 under the horizontal legs of the C-bars. Install the remaining rings and the inner row of C-bars as described for the outer row. Attach the inner row of C-bars pos. 8.1.1 to radial bar pos. 1.1.

In some cases there are extra bars pos. 1.6 between the anchors. Install these bars and pay attention not to damage the plastic shrink hose of the anchors. Check furthermore if the pos.ition 2.6, which is a radial bar similar to pos. 1.6 but placed underneath the upper main radial bars, is required for the actual site. If so place the pos. 2.6 between the bars together with pos. 1.6 ready to be installed on a later stage.

8.5.4 Shear reinforcement

The vertical reinforcement consists of shear locks equally distributed inside the anchor cage (pos. 8.1) and outside the anchor cage (pos. 8.2 and 8.3), as specified on the foundation drawing, and edge bars (pos. 7.1) installed at the edge. Inside the cage and at the edge the bars are C-shaped but the rest, pos. 8.2 and 8.3, are U-shaped with horizontal legs at the bottom. The horizontal legs of the U-shaped shear locks are installed with the legs pointing away from the centre close to the cage and against the centre at the edge to avoid conflicts with edge bars.

The shear locks (pos. 8.2 to 8.3) are designed to be located below the upper main reinforcement and serve as support in the installation phase. The shear locks are properly locked in the lower layer by hooking them under the lower concentric reinforcement. For the upper reinforcement, additional “hair pin” reinforcement will be placed at a later stage. Shear locks inside the cage are anchored in the upper main reinforcement without ‘hair pins’.

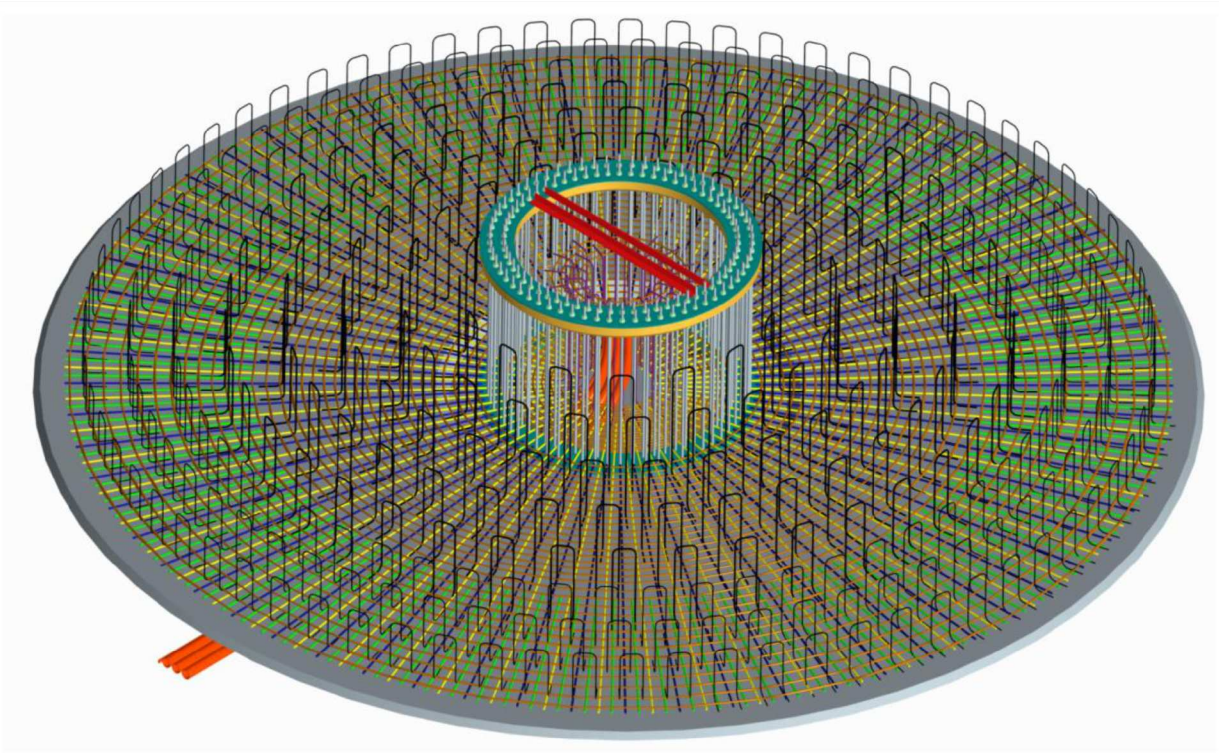

Figure 8.10: Shear locks installed

8.5.5 Upper radial reinforcement

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The upper radial and concentric reinforcement might differ in size but will have the same overall geometry. The radial bars are installed on top of the shear locks by using the anchor cage and lower reinforcement as a template.

In most cases the shear locks will offer sufficient support but in some cases it may be necessary to install 2-3 of the concentric rings pos. 4 under the radial bars to support the radial bars that are located between shear locks. Additional bars pos. 2.6 are in some cases required below the main radial bars where they pass the anchors. If required, they are specified on the foundation drawing.

Note that the radial bars have to be placed below the rings already present inside the cage to keep the vertical C-bars in position.

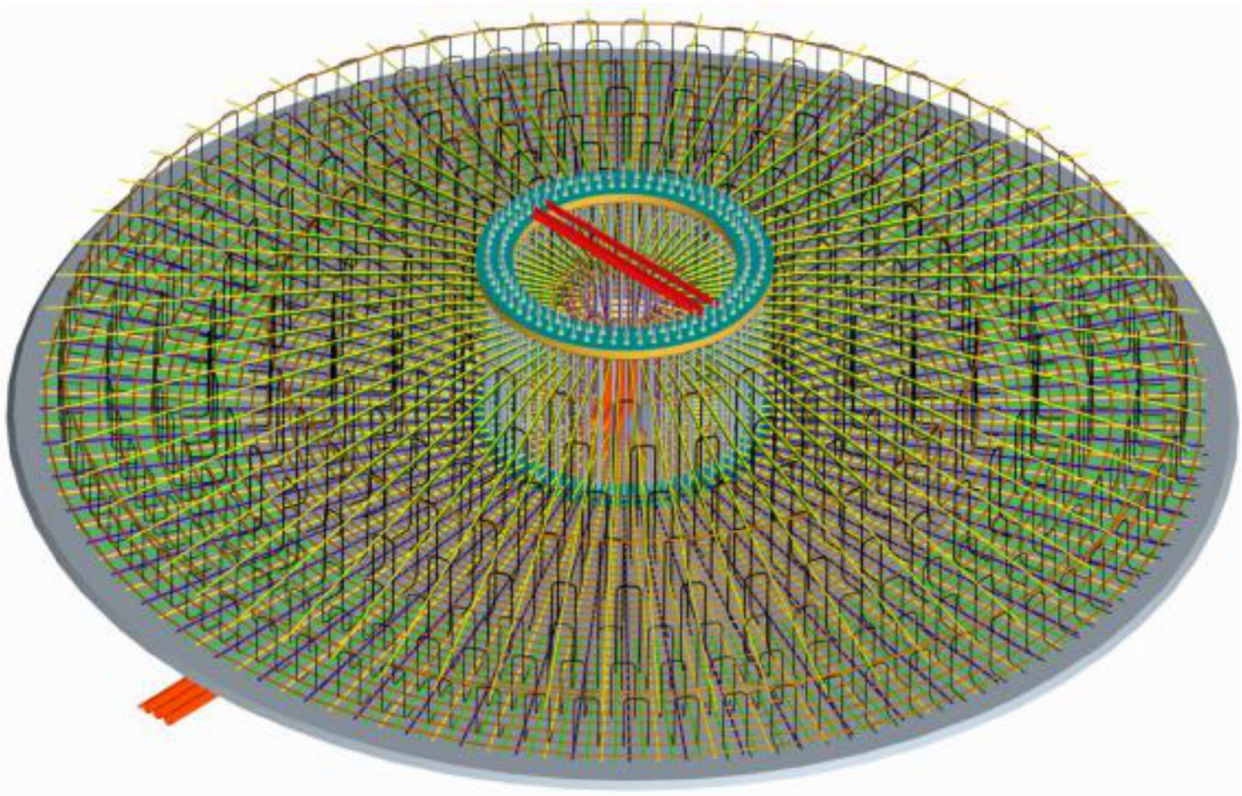

Figure 8.11: Upper radial bars passing anchors installed

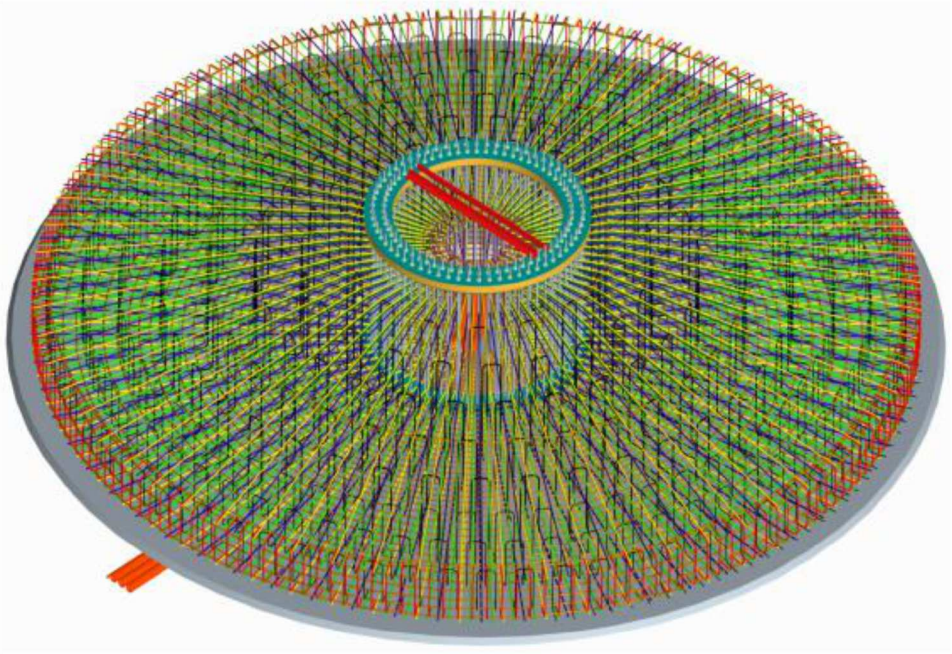

Figure 8.12: All upper radial reinforcement placed on shear locks

8.5.6 Upper concentric reinforcement

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The upper concentric reinforcement layer is installed on top of the radial layer inside and outside the anchor cage. It is allowed to arrange the concentric reinforcement pos. 3 and 4 as spirals having the same spacing as the concentric rings. The remaining radial bars are installed by attaching them to the concentric reinforcement.

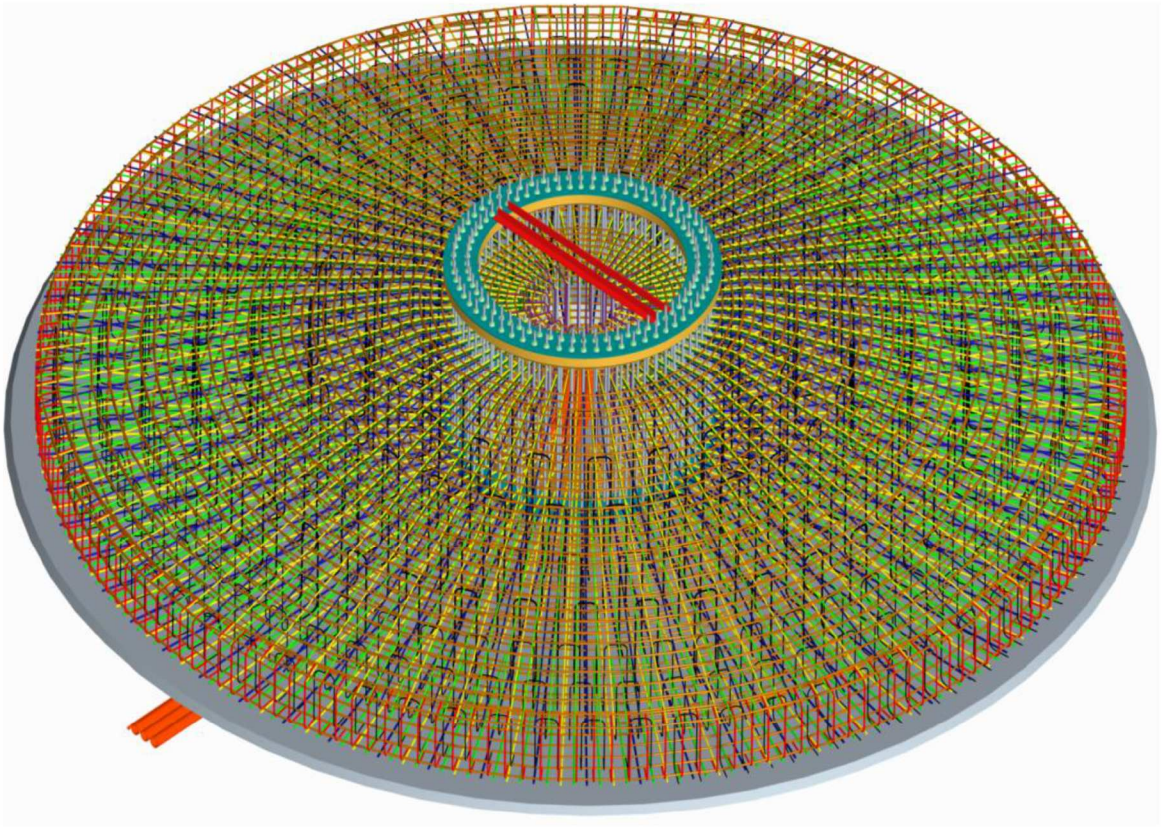

Figure 8.13: Upper concentric reinforcement in place

8.5.7 Edge reinforcement

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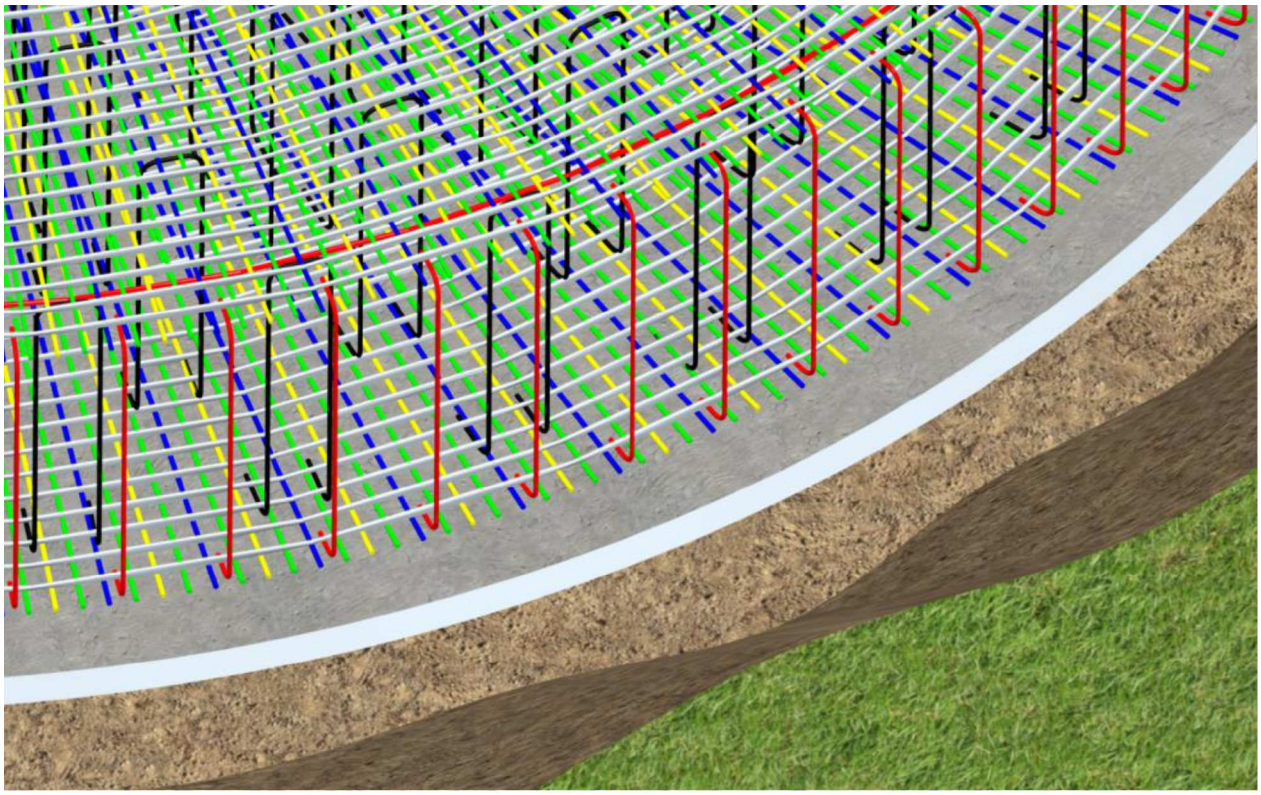

Figure 8.14: Edge bars installed at outer edge

8.5.8 Hair-pin shear locks

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With all concentric upper bars installed, hair pin-shaped reinforcement (pos. 8.4) is dropped from above for each shear lock. The hair pins are hooked in the radial bars. The vertical legs of the hair pins overlap with the vertical part of the shear reinforcement and are held in correct position with steel wires.

8.5.9 Plinth reinforcement

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The reinforcement of the plinth consists of a number of vertical bars, pos. 9.1 and 9.2, which are attached to the upper concentric reinforcement. Pos. 9.1 is placed exactly outside each anchor whereas pos. 9.1 typically is placed outside every 4th anchor, compare the actual numbers of bars on the drawing.

Place the rings pos. 10.3 to 10.8 on top of the upper radial bars for a convenient later installation.

If the foundation is concreted with a cold joint, install the upper horizontal ring pos. 10.1 and 10.2 to hold the vertical bars in the correct pos.ition. When concreting in one sequence continue as described.

Horizontal outer rings, pos. 10.1, are installed on the vertical bars pos. 9.1 in an equivalent distance. Similar to these 3 horizontal inner rings, pos. 10.2, are installed on the vertical bars pos. 9.2 to form support for the splitting bars pos. 11.1 and fix the top of the vertical bar.

Install the splitting bars pos. 11.1 shaped like a hook on every second horizontal rings in a radial direction. The splitting shall be hooked to the vertical bars pos. 9.1 and placed in two levels with an offset of one anchor distance. In some cases where the mandrel diameter conflicts with the anchor distance it will necessary to install the hooks some degrees out of horizontal plane. Lift the rings pos. 10.3 to 10.8 above the hairpins to make the final installation pos.sible.

Install the outer bows pos. 9.3 on the horizontal rings pos. 10.1 as close to the splitting bars as pos.sible and the inner bows on the horizontal rings pos. 10.2.

The concentric rings pos. 10.3 to 10.8 are lifted and attached to the bows.

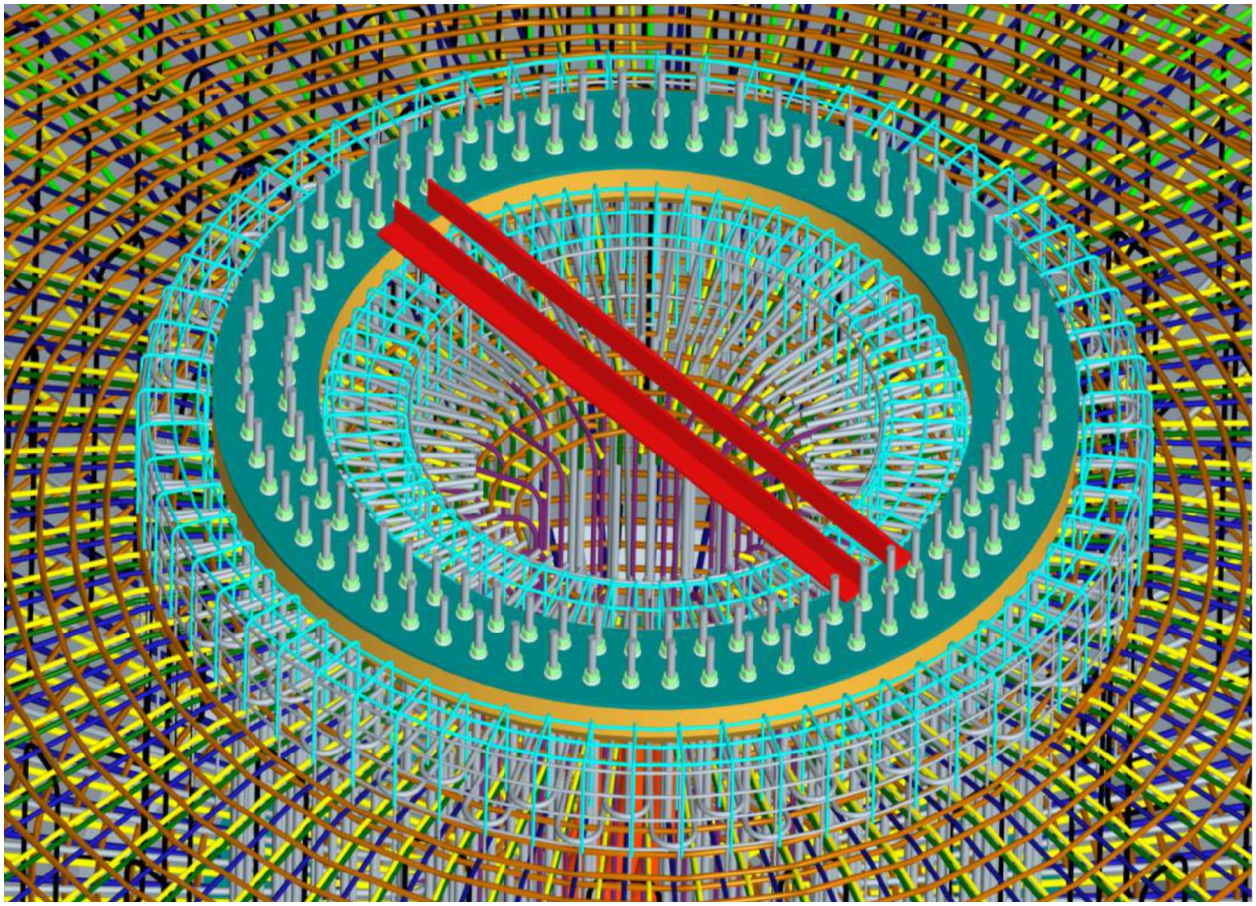

Figure 8.15: Reinforcement of pedestal

8.6 Earthing

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See 0019-2575 ‘Foundation earthing work description of foundation earthing on anchor cage foundation’ for information.

8.7 Formwork

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Formwork must be even, with no gaps at joints and must be supported and braced so it stays in pos.ition without deflection and displacement that may damage the form or harm the stability during the compacting of concrete. Joints in the formwork must be made so no leakage of concrete can occur.

Design and installation procedure of the formwork shall take into account temporary structures such as backpropping and consider requirements for handling, adjusting, tying, intentional precambering, loading, unkeying, striking and dismantling. Backpropping and formwork shall not be removed until the concrete has gained sufficient strength as directed by the foundation designer.

It is not accepted to use the excavation pit as a boundary during concrete pouring. Formwork must be used on all vertical faces.

Formwork of absorbent materials must be well water/oil soaked to reduce water uptake from the concrete. Formwork must be clean on the inside and treated with approved release agent before installing to prevent adhesion when stricken.

Formwork is normally installed in 2 phases; 1st phase is formwork for base casting. When the base has been cast and cured sufficiently (>15 MPa) the base formwork can be stricken and 2nd phase formwork (plinth) can be installed.

8.8 Concreting

0011380991

Prior to executing the concrete operation, the civil contractor must produce a concreting plan which explains contingencies in various situations e.g. batching plant breakdown, transport breakdown, weather forecast deterioration etc. The concreting is normally done in 2 phases, where 1st phases is casting the base and 2nd phase is casting the plinth.

Furthermore the civil contractor must present documentation for the concrete strength development, ideally cube crushing at 1 day, 3 day, 7 day and 14 day. The testing must be done in accordance to EN 12390: Testing hardened concrete.

8.8.1 Batching concrete

0011380990

A batching layout and plan which incorporates aggregate storage, conveyor systems, weighing hoopers, cement and flyash silos, water tanks, admixture containers, transportation access and egress amongst others must be approved.

Furthermore, environmental pollution prevention plan must be presented for review.

8.8.2 Transporting concrete

0011380989

Purpose mixer trucks (rotator trucks) must be used for transporting the concrete from the plant to the pouring location. Every precaution must be taken during loading and transportation to minimise segregation, bleeding, and paste loss of the fresh concrete.

Depending on the distance travelled, size of base and mixer truck carrying capacity, a substantial mixer truck fleet must be available as the casting should be completed within 10–12 hours.

8.8.3 Placing and compacting concrete

0011380988

Placing of the concrete should be done with a standalone concrete pump truck, as the concrete shall be placed by means of pump discharge and ***NOT*** compacted in place (which will result in excess vibration and cause bleed out). To avoid segregation, the concrete may not be dropped from a height higher than 1.0 m.

Prior to casting the plinth, a proper construction joint between the base and plinth has to be prepared by removing any loose material by means of high pressure water, removing excess water and applying a suitable primer agent.

No concrete shall be batched or poured if the ambient temperature falls below 0°C. No concrete shall be placed if frost or ice is present within the structural element formwork, reinforcement or on the blinding layer of the pour. If the ambient temperature falls below 0°C, then all curing concrete shall be protected with covers (frost blankets or equivalent) and/or controlled heating provided.

All batches of concrete shall be sampled from the chute and slumped at the point of discharge prior to any placing. Concrete for cube production shall be sampled from the chute at the point of discharge and transferred to a temperature controlled container (20°C +/- 2°C) for storage overnight until removed from the moulds and delivered to a testing facility. Cubes shall be crushed on 7 day, 28 day and one considered spare.Testing shall be done in accordance to EN 12350: Testing of fresh concrete.

All concrete must be properly vibrated using efficient high frequency vibrators to expel air and ensure full contact with all reinforcement and formwork surfaces. Great care should be taken to avoid segregation or pockets in the finished mass of concrete (avoid excess vibration).

The freshness of the concrete shall be continuously monitored throughout the duration of the pour. The maximum overlaying time for concrete is approximately 2 hours. In practice concrete shall not be overlaid if, on extraction of a poker vibrator, the concrete does not fully close back over. If a cold joint is starting to form then the civil contractor must inform Site Management immediately in order that the appropriate action can be taken.

If all batching plants and standby plant fail or there is an incident/accident that prevents access to the pour location then any placed concrete shall be allowed to cure. The surface of the concrete shall then be prepared by the excess/top surface cement washed out and dowel bars drilled and grouted into the concrete. Cold joints shall be formed by the application of chemical spray and the concrete shall then be vibrated through the interface to ensure a sufficient interface bond.

8.8.4 Surface finish

0011380987

All formed concrete surfaces (against formwork) shall be smooth and free from honeycombing and voids. However, small blemishes from air entrapment are to be expected.

Unformed surfaces shall be troweled smooth so that the surface appears even and uniform.

8.8.5 Protection and curing of the concrete

0011380986

After casting and vibration, all concrete surfaces expos.ed to air have to be treated with a curing agent with color pigment or a proper plastic coverage to protect the concrete against plastic shrinkage, solar radiation, strong wind, freezing and/or precipitation.

The concrete surface must not fall below 0°C until the concrete surface compressive strength has reached 5 MPa, where freezing can be resisted without damage. In such case insulation must be used outside formwork and all concrete surfaces.

The peak temperature of the concrete must not exceed 70°C. Furthermore the temperature gradient between the concrete component core and surface should be below 20°C. It is advisable to install temperature sensors in the concrete to monitor the temperature and describe measures to mitigate temperature issues in the concreting plan.

8.9 Grouting and levelling

0011380985

Table 8.2: Grouting and levelling of anchor cage

Anchor cage type		Grouting and levelling
AC 1.0	Horizontal assembly	0018-0710
AC 1.5	Vertical assembly	0018-0710
AC 2.0	Vertical assembly	0061-5853

8.10 Installation of tower

0011380984

Before installation of the tower, the civil site engineer must successfully perform a final inspection of the foundation. For normal concrete, a minimum curing period of four weeks is required. A specific calculation that takes actual environmental conditions (temperature, variation of temperature, humidity, etc.) into account, and/or the use of special concrete with additives, can reduce the curing period. Grouting and adjustment feet shall require a compression strength of

the concrete of min. 15 MPa at the day of installation. See 0018–0743 ‘Assembly and installation of anchor cage’.

8.11 Sealing of concrete top

0011380983

See 0045-8717 ‘Sealing of foundation top for information.

8.12 Post tension of anchor bolts

0011381002

See 0009-1539 ‘Final tensioning of foundation anchor bolts’ for information.

8.13 Backfilling and restoration

0011381001

Before backfilling operation can be executed, all concrete surfaces must be inspected and approved. The general filing material shall consist of approved natural material obtained directly from the excavations or borrow pits. Any such material must be free of brush, topsoil, roots, logs or any other organic material and must meet the requirements as stated by the foundation designer regarding the density of the backfill. The backfill should be compacted using suitable equipment, and in layers of no more than 300 mm.

Any ruts caused by work around the wind turbine foundation site should be leveled off for preparation of restoration. The stock-piled topsoil from the excavation works must be used. If the stock-piled has been damaged by machine compaction, dry-out, excessive water, vegetation up-side down a reseeding may be necessary. The restoration works must comply in full with the Environmental Management Plan.

CLASS T05

DOCUMENT:
0074-8846 VER 01

DESCRIPTION:
Foundation loads

Combine Foundation loads

V150, Mk3E, IEC3B, 105 m 50/60 Hz, GS

Version History

VERSION:	DATE:	CHANGE:
00	2018.04.30	New document
01	2018.08.08	Frequency range corrected

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1. Introduction

This document presents the foundation loads from the V150 - 4.0/4.2 MW, GS, HH 105, IEC3B load spectrum. The loads are simulated in accordance with IEC 61400 - 1 Edition 3, ref. [A]. Tower used for calculating the loads can be found in ref [B].

Reference	Description	Doc No.
[A]	IEC 61400-1 Edition 3	
[B]	Tower drawing	0074-7302

Table 1-1 Reference to documents.

Ref.	Simulation Path
[1]	Postloads folder: h:\3MW\Mk3E\TR2\V150.HH105\002\4000.VAS.AAO\Loads\Postloads\
[2]	Postloads folder: h:\3MW\Mk3E\TR2\V150.HH105\002\4200.VAS.AAO\Loads\Postloads\

Table 1-2 Reference to simulations.

2. Extreme loads

Foundation loads components at the instant of extreme resulting bending moment are given in tables below. Own weight moment contribution due to tower out of vertical (0.008 m/m) is included with PLF 1.10 in below resultant moments.

Loads are given at height: 0.20m

Extreme resulting tower bottom moment according to ref [1] incl. own weight moment contribution due to 8mm/m tower out of vertical and second order effects. *unfavorable loads: PLF = 1.1, favorable loads: PLF = 0.9.

Mbt1: Resulting bending moment. SQRT(Mxt1^2 + Myt1^2) (also M_{res})
Lead LC/Family

Characteristic Extreme								
Lead	LC/Family	PLF	Type	Mbt	Mzt	FndFr	Fzt	Ref
Sensor	[-]	[-]	[-]	[kNm]	[kNm]	[kN]	[kN]	[-]
Mbt	32PREogVra11(fam242)	1.35	Abs	**106000**	-498.6	968.4	-4936	[1]
Mzt	21RPY8Vo1a00(fam116)	1.35	Abs	36880	**-9622**	343.8	-4840	[2]
FndFr	23CoEogVra5(fam181)	1.10	Abs	125300	-536.4	**1201**	-4961	[2]
Fzt	12IceUHWO100(fam27)	1.35	Abs	37170	2040	379.6	**-5094**	[2]

Table 2-1 Characteristic Extreme (excl. PLF). Load cases sorted with PLF.

Characteristic Extreme								
Lead	LC/Family	PLF	Type	Mbt	Mzt	FndFr	Fzt	Ref
Sensor	[-]	[-]	[-]	[kNm]	[kNm]	[kN]	[kN]	[-]
Mbt	23CoEogVra4(fam180)	1.10	Abs	**125500**	-698.8	1176	-4946	[2]
Mzt	22VOGHWO300(fam168)	1.10	Abs	21970	**-10060**	203.9	-4774	[2]
FndFr	23CoEogVra5(fam181)	1.10	Abs	125300	-536.4	**1201**	-4961	[2]
Fzt	12IceUHWO100(fam27)	1.35	Abs	37170	2040	379.6	**-5094**	[2]

Table 2-2 Characteristic Extreme (excl. PLF). Load cases sorted without PLF.

Characteristic Extreme								
Lead	LC/Family	PLF	Type	Mbt	Mzt	FndFr	Fzt	Ref
Sensor	[-]	[-]	[-]	[kNm]	[kNm]	[kN]	[kN]	[-]
Mbt	23CoEogVra4(fam180)	1.10	Abs	**125500**	-698.8	1176	-4946	[2]
Mzt	22VOGHWO300(fam168)	1.10	Abs	21970	**-10060**	203.9	-4774	[2]
FndFr	23CoEogVra5(fam181)	1.10	Abs	125300	-536.4	**1201**	-4961	[2]
Fzt	22VOGHWO200(fam167)	1.10	Abs	36490	1621	367.4	**-5040**	[1]

Table 2-3 Characteristic Extreme (excl. PLF). Only load cases with PLF = 1.10.

Characteristic Extreme								
Lead	LC/Family	PLF	Type	Mbt	Mzt	FndFr	Fzt	Ref
Sensor	[-]	[-]	[-]	[kNm]	[kNm]	[kN]	[kN]	[-]
Mbt	32PREogVra11(fam242)	1.35	Abs	**106000**	-498.6	968.4	-4936	[1]
Mzt	21RPY8Vo1a00(fam116)	1.35	Abs	36880	**-9622**	343.8	-4840	[2]
FndFr	14EcdVrpa00(fam54)	1.35	Abs	98730	-1765	**973.7**	-4946	[2]
Fzt	12IceUHWO100(fam27)	1.35	Abs	37170	2040	379.6	**-5094**	[2]

Table 2-4 Characteristic Extreme (excl. PLF). Only load cases with PLF = 1.35.

3. Production loads

The production loads are calculated for the main sensors of the foundation. The following loads are calculated.

Char. load Characteristic Extreme (excl. PLF, Load cases sorted without PLF). Only load cases with PLF = 1.35 and 1.50 are included in the evaluation.

Prob.: 1e-2 Load level with an exceedance probability of 1e-2

Prob.: 1e-4 Load level with an exceedance probability of 1e-4

Production loads							
		Char. load	Prob.:1e-2	Prob.:1e-4	Ref		
M_{res}	[kNm]	106000.00	73172.11	81799.59	[1]	[2]	[1]
M_z	[kNm]	-9622.07	-4079.72	-6879.56	[2]	[1]	[1]
F_{res}	[kN]	973.74	679.73	777.36	[2]	[2]	[2]
F_z	[kN]	-5094.38	-4979.90	-5012.99	[2]	[2]	[2]

Table 3-1 Production loads

4. Fatigue loads

For the foundation, the mean loads have to be considered. The mean loads must be combined with either the equivalent loads or the fatigue load spectrum.

Loads are given at height: 0.20m

The equivalent loads given may be used only if the material property can be characterized by an S/N-curve with the same slope as given for the equivalent loads.

Equivalent and Mean Fatigue Foundation Loads							
		Mean load	Range m = 4	Range m = 7	Ref.		
Fy	[kN]	345.38	489.17	442.71	[1]	[1]	[1]
Mx	[kNm]	-36298.44	29776.57	33466.32	[1]	[1]	[1]
Mz	[kNm]	-217.52	7848.54	7725.46	[1]	[1]	[1]

Table 4-1 Fatigue loads for N=1E7 cycles.

5. Stiffness of foundation

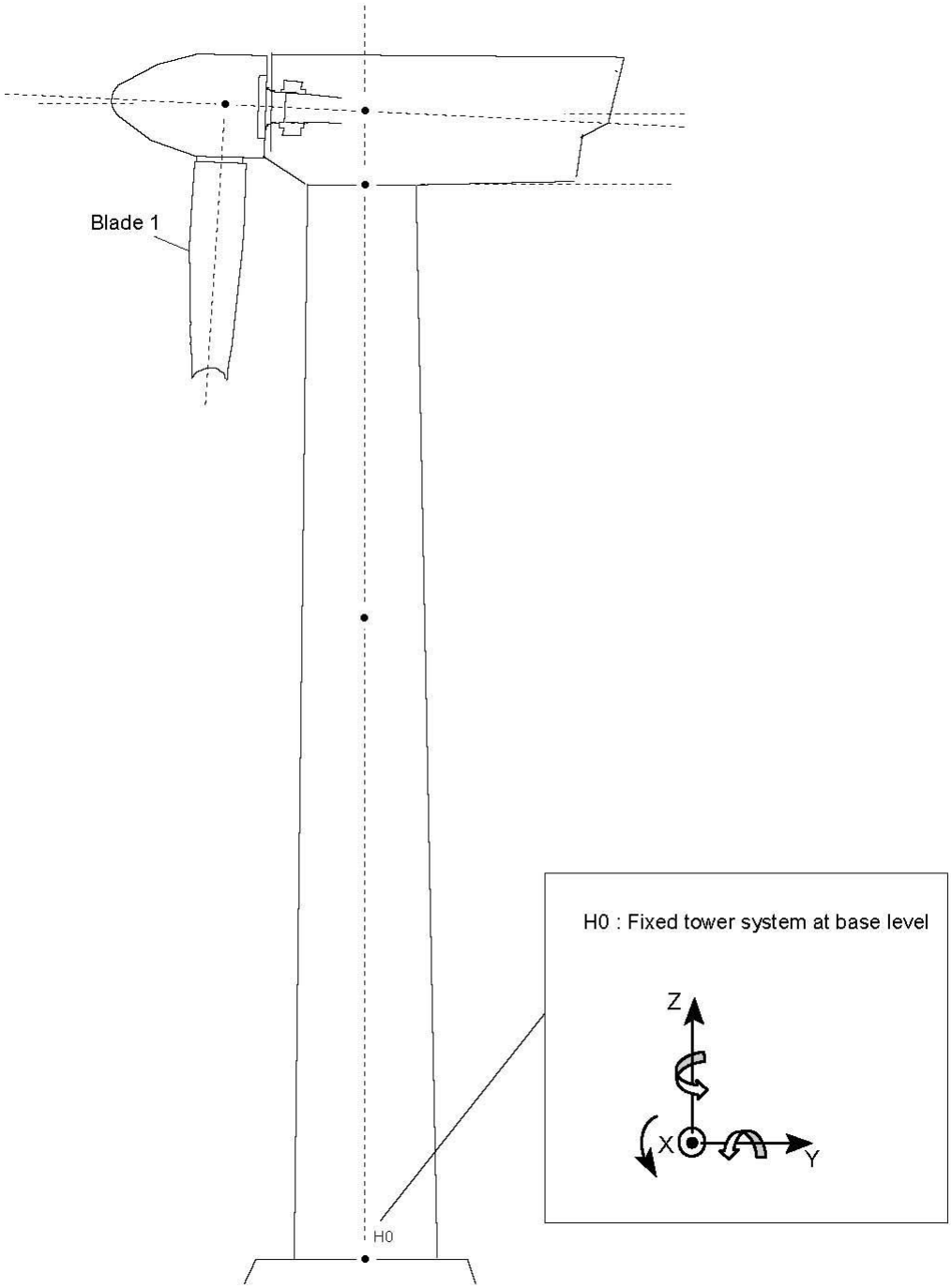
The nominal spring stiffness used for the load calculations is 500 GNm/rad resulting in a nominal tower frequency of 0.201 Hz. The spring stiffness of the foundation must be at least $C_{\varphi,dyn} \geq 100$ GNm/rad for the loads to be valid. Concurrent values for rotational- and lateral stiffness of the foundation are given in Table 5-1.

Concurrent values for rotational- and lateral stiffness										
Rotational stiffness	[GNm/rad]	100	120	152	193	245	311	394	450	500
Lateral stiffness	[MN/m]	7.0	7.3	6.4	6.0	6.0	6.0	6.0	6.0	6.0

Table 5-1 Minimum lateral stiffness.

The natural frequency of the tower must be within the frequency interval [0.191 Hz; 0.211 Hz]

Appendix A. Co-ordinate systems



Appendix B. Rain flow count

This appendix contains the rain flow spectrum for the shear force, the bending moment and the torsional moment in the bottom of the tower.

Foundation Fatigue Load Spectrum					
Tower shear, bottom F_y [kN]		**Tower bending, bottom M_x [kNm]**		**Tower torsion, bottom M_z [kNm]**	
Range	Frequency	Range	Frequency	Range	Frequency
1.3567E+03	1.7500E+00	1.3082E+05	8.7500E+00	1.5320E+04	3.2268E+02
1.3024E+03	1.4000E+01	1.2559E+05	2.1000E+01	1.4707E+04	7.4882E+02
1.2481E+03	2.0958E+01	1.2035E+05	2.2750E+01	1.4095E+04	3.0544E+03
1.1939E+03	3.1458E+01	1.1512E+05	3.1417E+01	1.3482E+04	4.0056E+03
1.1396E+03	2.9667E+01	1.0989E+05	2.2667E+01	1.2869E+04	1.0828E+04
1.0853E+03	7.3042E+01	1.0466E+05	6.6083E+01	1.2256E+04	2.2922E+04
1.0311E+03	1.3029E+02	9.9423E+04	4.6918E+01	1.1643E+04	5.3927E+04
9.7679E+02	1.7271E+02	9.4190E+04	4.5142E+02	1.1031E+04	7.4934E+04
9.2253E+02	3.5453E+02	8.8957E+04	1.5458E+02	1.0418E+04	1.3347E+05
8.6826E+02	1.5178E+02	8.3724E+04	8.9835E+01	9.8050E+03	2.3827E+05
8.1399E+02	1.0171E+03	7.8492E+04	3.3891E+02	9.1922E+03	4.0243E+05
7.5973E+02	8.5982E+03	7.3259E+04	2.3040E+03	8.5794E+03	5.1959E+05
7.0546E+02	2.6808E+04	6.8026E+04	2.9435E+02	7.9666E+03	6.0571E+05
6.5120E+02	7.4572E+04	6.2793E+04	3.7550E+03	7.3537E+03	8.3713E+05
5.9693E+02	2.1235E+05	5.7560E+04	1.9982E+04	6.7409E+03	1.3436E+06
5.4266E+02	4.0967E+05	5.2328E+04	7.9577E+04	6.1281E+03	1.9011E+06
4.8840E+02	8.4930E+05	4.7095E+04	1.9865E+05	5.5153E+03	3.9108E+06
4.3413E+02	1.8048E+06	4.1862E+04	3.6323E+05	4.9025E+03	6.3747E+06
3.7986E+02	3.6512E+06	3.6629E+04	6.1528E+05	4.2897E+03	1.1412E+07
3.2560E+02	8.0876E+06	3.1397E+04	1.3475E+06	3.6769E+03	1.9046E+07
2.7133E+02	2.0389E+07	2.6164E+04	2.6663E+06	3.0641E+03	2.9732E+07
2.1707E+02	5.4931E+07	2.0931E+04	5.3013E+06	2.4512E+03	4.5565E+07
1.6280E+02	1.2200E+08	1.5698E+04	1.7478E+07	1.8384E+03	6.0379E+07
1.0853E+02	2.2396E+08	1.0466E+04	8.0422E+07	1.2256E+03	6.9259E+07
5.4266E+01	4.4111E+08	5.2328E+03	3.7686E+08	6.1281E+02	1.7512E+08

Table 5-2 [1] Rainflow counting spectra

Foundation Fatigue Load Spectrum					
Tower shear, bottom F_y [kN]		Tower bending, bottom M_x [kNm]		Tower torsion, bottom M_z [kNm]	
Range	Frequency	Range	Frequency	Range	Frequency
1.3926E+03	1.7500E+00	1.3203E+05	1.0500E+01	1.5381E+04	3.4879E+02
1.3369E+03	5.2500E+00	1.2674E+05	1.2250E+01	1.4765E+04	7.8308E+02
1.2812E+03	1.5750E+01	1.2146E+05	3.3250E+01	1.4150E+04	1.4068E+03
1.2255E+03	4.0167E+01	1.1618E+05	2.4458E+01	1.3535E+04	2.9187E+03
1.1698E+03	2.4458E+01	1.1090E+05	2.6125E+01	1.2920E+04	1.0738E+04
1.1141E+03	3.8334E+01	1.0562E+05	3.8292E+01	1.2304E+04	1.0513E+04
1.0584E+03	1.1121E+02	1.0034E+05	1.2679E+02	1.1689E+04	2.7307E+04
1.0027E+03	1.2975E+02	9.5058E+04	1.9275E+02	1.1074E+04	5.8832E+04
9.4699E+02	5.0625E+02	8.9777E+04	3.0733E+02	1.0459E+04	1.0206E+05
8.9128E+02	1.0207E+02	8.4496E+04	1.3496E+02	9.8436E+03	1.8413E+05
8.3558E+02	6.8181E+02	7.9215E+04	2.6421E+02	9.2284E+03	3.5210E+05
7.7987E+02	2.7656E+03	7.3934E+04	1.0310E+03	8.6131E+03	3.7503E+05
7.2417E+02	1.1628E+04	6.8653E+04	9.9922E+02	7.9979E+03	4.5841E+05
6.6846E+02	4.9266E+04	6.3372E+04	3.4396E+02	7.3827E+03	8.1093E+05
6.1276E+02	1.3963E+05	5.8091E+04	2.1611E+04	6.7675E+03	8.3349E+05
5.5705E+02	2.6630E+05	5.2810E+04	3.2816E+04	6.1522E+03	1.8039E+06
5.0135E+02	6.1043E+05	4.7529E+04	2.0091E+05	5.5370E+03	2.9953E+06
4.4564E+02	1.3060E+06	4.2248E+04	3.4982E+05	4.9218E+03	5.6728E+06
3.8994E+02	2.6035E+06	3.6967E+04	5.3372E+05	4.3066E+03	9.8719E+06
3.3423E+02	5.7848E+06	3.1686E+04	1.0661E+06	3.6913E+03	1.7067E+07
2.7853E+02	1.6308E+07	2.6405E+04	2.1861E+06	3.0761E+03	2.7920E+07
2.2282E+02	4.4206E+07	2.1124E+04	4.6079E+06	2.4609E+03	4.3051E+07
1.6712E+02	1.1011E+08	1.5843E+04	1.6059E+07	1.8457E+03	6.1382E+07
1.1141E+02	2.1496E+08	1.0562E+04	7.4350E+07	1.2304E+03	6.7995E+07
5.5705E+01	4.3851E+08	5.2810E+03	3.5649E+08	6.1522E+02	1.7114E+08

Table 5-3 [2] Rainflow counting spectra.

Appendix C. [1] Markov matrices

This appendix contains the Markov Matrices for the shear force, the bending moment and the torsional moment in the bottom of the tower [1]. Foundation design must be verified for the most critical Markov matrices.

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
7.9578E+02	2.7133E+01	4.4921E+03	5.2712E+04	0.0000E+00	7.0000E+00	4.6126E+03	0.0000E+00	3.8902E+02
7.6723E+02	1.3567E+02	7.9025E+03	4.9888E+04	2.6164E+03	3.5000E+00	4.2505E+03	1.5320E+03	3.5000E+00
7.6723E+02	8.1399E+01	1.6667E-01	4.9888E+04	0.0000E+00	3.5000E+00	4.2505E+03	3.0641E+02	1.5927E+04
7.6723E+02	0.0000E+00	7.9027E+03	4.7063E+04	2.6164E+03	7.0000E+00	4.2505E+03	0.0000E+00	2.0584E+04
7.3868E+02	1.6280E+02	4.4921E+03	4.7063E+04	0.0000E+00	2.8000E+01	3.8884E+03	3.3705E+03	3.5000E+00
7.3868E+02	1.3567E+02	1.2100E+04	4.4239E+04	0.0000E+00	7.3500E+01	3.8884E+03	3.0641E+03	2.2394E+03
7.3868E+02	1.0853E+02	1.2100E+04	4.1414E+04	2.6164E+03	1.0500E+01	3.8884E+03	9.1922E+02	1.3158E+02
7.3868E+02	8.1399E+01	3.8333E+00	4.1414E+04	0.0000E+00	4.2000E+01	3.8884E+03	3.0641E+02	1.8677E+04
7.3868E+02	5.4266E+01	1.6603E+04	3.8590E+04	2.6164E+03	3.5000E+00	3.8884E+03	0.0000E+00	1.0928E+05
7.3868E+02	2.7133E+01	2.4495E+04	3.8590E+04	0.0000E+00	3.8500E+01	3.5263E+03	2.4512E+03	1.5924E+04
7.3868E+02	0.0000E+00	8.7676E+04	3.5766E+04	5.2328E+03	3.5000E+00	3.5263E+03	1.8384E+03	8.9709E+03
7.1013E+02	1.8993E+02	4.4921E+03	3.5766E+04	2.6164E+03	2.1000E+01	3.5263E+03	9.1922E+02	4.4921E+03
7.1013E+02	1.6280E+02	7.9025E+03	3.5766E+04	0.0000E+00	3.5000E+01	3.5263E+03	6.1281E+02	1.8548E+04
7.1013E+02	1.3567E+02	1.0584E+01	3.2941E+04	0.0000E+00	3.8417E+01	3.5263E+03	3.0641E+02	1.0602E+05
7.1013E+02	1.0853E+02	4.8401E+04	3.0117E+04	2.6164E+03	2.0917E+01	3.5263E+03	0.0000E+00	3.3627E+05
7.1013E+02	8.1399E+01	1.5809E+04	3.0117E+04	0.0000E+00	4.1917E+01	3.1642E+03	4.5961E+03	3.8219E+02
7.1013E+02	5.4266E+01	3.5989E+04	2.7292E+04	2.6164E+03	1.3000E+01	3.1642E+03	3.6769E+03	3.5000E+00
7.1013E+02	2.7133E+01	1.3212E+05	2.7292E+04	0.0000E+00	1.1725E+02	3.1642E+03	3.0641E+03	1.5928E+04
7.1013E+02	0.0000E+00	5.0221E+05	2.4468E+04	6.2793E+04	3.5000E+00	3.1642E+03	2.7577E+03	1.5924E+04
6.8158E+02	2.7133E+02	1.6667E-01	2.4468E+04	5.7560E+04	3.5000E+00	3.1642E+03	2.4512E+03	3.2230E+04
6.8158E+02	2.1707E+02	1.3917E+01	2.4468E+04	5.4944E+04	3.5000E+00	3.1642E+03	1.8384E+03	1.6059E+04
6.8158E+02	1.8993E+02	7.9355E+03	2.4468E+04	5.2328E+03	1.0417E+01	3.1642E+03	1.5320E+03	1.5924E+04
6.8158E+02	1.6280E+02	4.7918E+04	2.4468E+04	2.6164E+03	1.0500E+01	3.1642E+03	1.2256E+03	5.2268E+04
6.8158E+02	1.3567E+02	6.4623E+04	2.4468E+04	0.0000E+00	4.8917E+01	3.1642E+03	9.1922E+02	3.8721E+04
6.8158E+02	1.0853E+02	1.2817E+05	2.1644E+04	6.2793E+04	1.7500E+00	3.1642E+03	6.1281E+02	5.0957E+04
6.8158E+02	8.1399E+01	2.6681E+05	2.1644E+04	6.0177E+04	3.5000E+00	3.1642E+03	3.0641E+02	2.5911E+05
6.8158E+02	5.4266E+01	4.2026E+05	2.1644E+04	5.7560E+04	5.2500E+00	3.1642E+03	0.0000E+00	8.3658E+05
6.8158E+02	2.7133E+01	5.6602E+05	2.1644E+04	5.4944E+04	1.7500E+00	2.8022E+03	3.0641E+03	3.8219E+02
6.8158E+02	0.0000E+00	2.5536E+06	2.1644E+04	5.2328E+04	3.5000E+00	2.8022E+03	2.4512E+03	4.8756E+04
6.5302E+02	2.7133E+02	1.2194E+04	2.1644E+04	4.9711E+04	3.5000E+00	2.8022E+03	2.1448E+03	6.7051E+04
6.5302E+02	2.4420E+02	4.4370E+04	2.1644E+04	4.7095E+04	1.7500E+00	2.8022E+03	1.8384E+03	1.2011E+05
6.5302E+02	2.1707E+02	7.6430E+04	2.1644E+04	4.1862E+04	1.7500E+00	2.8022E+03	1.5320E+03	9.5676E+04
6.5302E+02	1.8993E+02	1.9626E+05	2.1644E+04	2.6164E+03	7.0000E+00	2.8022E+03	1.2256E+03	5.3235E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
6.5302E+02	1.6280E+02	3.5573E+05	2.1644E+04	0.0000E+00	3.6458E+02	2.8022E+03	9.1922E+02	1.1250E+05
6.5302E+02	1.3567E+02	5.6682E+05	1.8819E+04	6.2793E+04	1.7500E+00	2.8022E+03	6.1281E+02	2.8906E+05
6.5302E+02	1.0853E+02	8.9624E+05	1.8819E+04	6.0177E+04	3.5000E+00	2.8022E+03	3.0641E+02	7.1966E+05
6.5302E+02	8.1399E+01	1.3369E+06	1.8819E+04	5.7560E+04	8.7500E+00	2.8022E+03	0.0000E+00	1.6470E+06
6.5302E+02	5.4266E+01	1.6724E+06	1.8819E+04	5.4944E+04	8.7500E+00	2.4401E+03	6.7409E+03	1.7500E+00
6.5302E+02	2.7133E+01	2.7703E+06	1.8819E+04	5.2328E+04	8.7500E+00	2.4401E+03	5.2089E+03	1.3158E+02
6.5302E+02	0.0000E+00	8.6108E+06	1.8819E+04	4.7095E+04	1.7500E+00	2.4401E+03	4.9025E+03	4.4921E+03
6.2447E+02	3.7986E+02	3.9513E+03	1.8819E+04	4.4479E+04	3.5000E+00	2.4401E+03	4.5961E+03	7.6438E+02
6.2447E+02	3.5273E+02	1.0417E+01	1.8819E+04	4.1862E+04	5.2500E+00	2.4401E+03	3.6769E+03	5.8581E+03
6.2447E+02	3.2560E+02	6.0503E+03	1.8819E+04	7.8492E+03	1.3917E+01	2.4401E+03	3.3705E+03	5.0083E+04
6.2447E+02	2.9846E+02	1.2106E+04	1.8819E+04	2.6164E+03	1.1117E+02	2.4401E+03	3.0641E+03	2.9769E+04
6.2447E+02	2.7133E+02	8.0697E+04	1.8819E+04	0.0000E+00	7.8873E+02	2.4401E+03	2.7577E+03	8.7023E+04
6.2447E+02	2.4420E+02	2.2022E+05	1.5995E+04	5.7560E+04	1.7500E+00	2.4401E+03	2.4512E+03	1.8950E+05
6.2447E+02	2.1707E+02	5.7184E+05	1.5995E+04	5.4944E+04	1.7500E+00	2.4401E+03	2.1448E+03	1.3267E+05
6.2447E+02	1.8993E+02	1.0807E+06	1.5995E+04	5.2328E+04	1.7500E+00	2.4401E+03	1.8384E+03	1.7161E+05
6.2447E+02	1.6280E+02	1.7381E+06	1.5995E+04	4.9711E+04	3.5000E+00	2.4401E+03	1.5320E+03	2.5785E+05
6.2447E+02	1.3567E+02	2.5469E+06	1.5995E+04	4.7095E+04	3.5000E+00	2.4401E+03	1.2256E+03	2.1198E+05
6.2447E+02	1.0853E+02	4.2432E+06	1.5995E+04	4.4479E+04	1.7500E+00	2.4401E+03	9.1922E+02	4.3829E+05
6.2447E+02	8.1399E+01	5.7537E+06	1.5995E+04	4.1862E+04	1.7500E+00	2.4401E+03	6.1281E+02	5.6709E+05
6.2447E+02	5.4266E+01	6.8149E+06	1.5995E+04	3.9246E+04	1.7500E+00	2.4401E+03	3.0641E+02	1.5565E+06
6.2447E+02	2.7133E+01	8.8018E+06	1.5995E+04	3.6629E+04	1.7500E+00	2.4401E+03	0.0000E+00	3.7460E+06
6.2447E+02	0.0000E+00	2.0997E+07	1.5995E+04	1.5698E+04	7.0000E+00	2.0780E+03	8.2730E+03	3.3250E+00
5.9592E+02	5.1553E+02	6.0500E+03	1.5995E+04	1.3082E+04	3.5000E+00	2.0780E+03	5.5153E+03	9.8386E+02
5.9592E+02	4.8840E+02	1.2100E+04	1.5995E+04	5.2328E+03	3.5000E+00	2.0780E+03	5.2089E+03	1.4976E+03
5.9592E+02	4.3413E+02	8.3335E-02	1.5995E+04	2.6164E+03	1.3567E+02	2.0780E+03	4.9025E+03	2.2246E+04
5.9592E+02	4.0700E+02	1.8202E+04	1.5995E+04	0.0000E+00	1.3272E+04	2.0780E+03	4.5961E+03	6.7333E+03
5.9592E+02	3.7986E+02	1.4167E+01	1.3170E+04	5.7560E+04	1.7500E+00	2.0780E+03	4.2897E+03	5.3214E+04
5.9592E+02	3.5273E+02	4.2352E+04	1.3170E+04	5.2328E+04	3.5000E+00	2.0780E+03	3.9833E+03	1.0012E+05
5.9592E+02	3.2560E+02	7.6379E+04	1.3170E+04	4.9711E+04	3.5000E+00	2.0780E+03	3.6769E+03	8.4661E+04
5.9592E+02	2.9846E+02	3.9503E+05	1.3170E+04	4.4479E+04	1.7500E+00	2.0780E+03	3.3705E+03	1.1804E+05
5.9592E+02	2.7133E+02	7.8478E+05	1.3170E+04	2.8780E+04	1.7500E+00	2.0780E+03	3.0641E+03	1.8286E+05
5.9592E+02	2.4420E+02	1.3068E+06	1.3170E+04	2.6164E+04	3.5000E+00	2.0780E+03	2.7577E+03	2.2111E+05
5.9592E+02	2.1707E+02	2.4547E+06	1.3170E+04	2.3547E+04	3.5000E+00	2.0780E+03	2.4512E+03	1.9144E+05
5.9592E+02	1.8993E+02	4.3619E+06	1.3170E+04	2.0931E+04	1.0500E+01	2.0780E+03	2.1448E+03	4.9689E+05
5.9592E+02	1.6280E+02	5.8411E+06	1.3170E+04	1.8315E+04	1.4000E+01	2.0780E+03	1.8384E+03	5.9965E+05
5.9592E+02	1.3567E+02	7.9718E+06	1.3170E+04	1.5698E+04	3.5000E+00	2.0780E+03	1.5320E+03	4.5008E+05
5.9592E+02	1.0853E+02	1.0591E+07	1.3170E+04	1.3082E+04	3.5000E+00	2.0780E+03	1.2256E+03	4.4815E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
5.9592E+02	8.1399E+01	1.2893E+07	1.3170E+04	1.0466E+04	3.5000E+00	2.0780E+03	9.1922E+02	6.9062E+05
5.9592E+02	5.4266E+01	1.3096E+07	1.3170E+04	7.8492E+03	7.0000E+00	2.0780E+03	6.1281E+02	9.9083E+05
5.9592E+02	2.7133E+01	1.7696E+07	1.3170E+04	5.2328E+03	2.5700E+02	2.0780E+03	3.0641E+02	2.8333E+06
5.9592E+02	0.0000E+00	3.4232E+07	1.3170E+04	2.6164E+03	3.4365E+02	2.0780E+03	0.0000E+00	5.8638E+06
5.6737E+02	5.6980E+02	8.3335E-02	1.3170E+04	0.0000E+00	4.9181E+04	1.7159E+03	8.2730E+03	3.3964E+03
5.6737E+02	5.4266E+02	5.2918E+00	1.0346E+04	4.4479E+04	5.2500E+00	1.7159E+03	7.9666E+03	1.7500E+00
5.6737E+02	5.1553E+02	6.0503E+03	1.0346E+04	3.4013E+04	1.0500E+01	1.7159E+03	7.0473E+03	1.7500E+00
5.6737E+02	4.8840E+02	6.0555E+03	1.0346E+04	3.1397E+04	7.0000E+00	1.7159E+03	6.7409E+03	5.1377E+02
5.6737E+02	4.6126E+02	1.8155E+04	1.0346E+04	2.6164E+04	3.7667E+01	1.7159E+03	6.1281E+03	8.4433E+03
5.6737E+02	4.3413E+02	2.4207E+04	1.0346E+04	2.3547E+04	1.1950E+02	1.7159E+03	5.8217E+03	3.8219E+02
5.6737E+02	4.0700E+02	9.4330E+04	1.0346E+04	2.0931E+04	1.0233E+02	1.7159E+03	5.5153E+03	9.8561E+02
5.6737E+02	3.7986E+02	1.6465E+05	1.0346E+04	1.8315E+04	3.5917E+01	1.7159E+03	5.2089E+03	8.8897E+03
5.6737E+02	3.5273E+02	3.3964E+05	1.0346E+04	1.5698E+04	2.8125E+02	1.7159E+03	4.9025E+03	2.6274E+04
5.6737E+02	3.2560E+02	6.1227E+05	1.0346E+04	1.3082E+04	2.4733E+02	1.7159E+03	4.5961E+03	4.3080E+04
5.6737E+02	2.9846E+02	7.8768E+05	1.0346E+04	1.0466E+04	3.8097E+03	1.7159E+03	4.2897E+03	9.1190E+04
5.6737E+02	2.7133E+02	1.3071E+06	1.0346E+04	7.8492E+03	3.8132E+03	1.7159E+03	3.9833E+03	1.8169E+05
5.6737E+02	2.4420E+02	1.8082E+06	1.0346E+04	5.2328E+03	4.0765E+03	1.7159E+03	3.6769E+03	2.2910E+05
5.6737E+02	2.1707E+02	3.8290E+06	1.0346E+04	2.6164E+03	1.4427E+04	1.7159E+03	3.3705E+03	3.0044E+05
5.6737E+02	1.8993E+02	5.1578E+06	1.0346E+04	0.0000E+00	1.4870E+05	1.7159E+03	3.0641E+03	4.7104E+05
5.6737E+02	1.6280E+02	7.5769E+06	7.5216E+03	3.6629E+04	2.8917E+01	1.7159E+03	2.7577E+03	5.8173E+05
5.6737E+02	1.3567E+02	1.0946E+07	7.5216E+03	3.1397E+04	7.0000E+00	1.7159E+03	2.4512E+03	5.9983E+05
5.6737E+02	1.0853E+02	1.3080E+07	7.5216E+03	2.8780E+04	1.0500E+01	1.7159E+03	2.1448E+03	9.0697E+05
5.6737E+02	8.1399E+01	1.5753E+07	7.5216E+03	2.6164E+04	1.5750E+01	1.7159E+03	1.8384E+03	8.1190E+05
5.6737E+02	5.4266E+01	1.7890E+07	7.5216E+03	2.3547E+04	1.3658E+02	1.7159E+03	1.5320E+03	1.0854E+06
5.6737E+02	2.7133E+01	2.1353E+07	7.5216E+03	2.0931E+04	1.4992E+02	1.7159E+03	1.2256E+03	1.2574E+06
5.6737E+02	0.0000E+00	4.1338E+07	7.5216E+03	1.8315E+04	8.6589E+03	1.7159E+03	9.1922E+02	1.1227E+06
5.3882E+02	6.2406E+02	3.9513E+03	7.5216E+03	1.5698E+04	3.8335E+03	1.7159E+03	6.1281E+02	1.4713E+06
5.3882E+02	5.6980E+02	3.9513E+03	7.5216E+03	1.3082E+04	2.2993E+04	1.7159E+03	3.0641E+02	3.8164E+06
5.3882E+02	5.4266E+02	2.2461E+03	7.5216E+03	1.0466E+04	7.3182E+03	1.7159E+03	0.0000E+00	8.6394E+06
5.3882E+02	5.1553E+02	3.1975E+04	7.5216E+03	7.8492E+03	3.1869E+04	1.3538E+03	8.8858E+03	1.1197E+03
5.3882E+02	4.8840E+02	4.0065E+04	7.5216E+03	5.2328E+03	2.1094E+04	1.3538E+03	7.0473E+03	1.1703E+04
5.3882E+02	4.6126E+02	6.3972E+04	7.5216E+03	2.6164E+03	3.3098E+04	1.3538E+03	6.7409E+03	6.1973E+03
5.3882E+02	4.3413E+02	1.0605E+05	7.5216E+03	0.0000E+00	5.8277E+05	1.3538E+03	6.4345E+03	8.9775E+03
5.3882E+02	4.0700E+02	1.8304E+05	4.6972E+03	5.4944E+04	1.7500E+00	1.3538E+03	6.1281E+03	7.9690E+03
5.3882E+02	3.7986E+02	1.5470E+05	4.6972E+03	5.2328E+04	1.2500E+00	1.3538E+03	5.8217E+03	1.1307E+04
5.3882E+02	3.5273E+02	1.5519E+05	4.6972E+03	3.1397E+04	1.2492E+02	1.3538E+03	5.5153E+03	2.4835E+04
5.3882E+02	3.2560E+02	2.6063E+05	4.6972E+03	2.8780E+04	5.2500E+00	1.3538E+03	5.2089E+03	6.5303E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
5.3882E+02	2.9846E+02	4.1589E+05	4.6972E+03	2.6164E+04	2.8000E+01	1.3538E+03	4.9025E+03	8.8836E+04
5.3882E+02	2.7133E+02	7.5024E+05	4.6972E+03	2.3547E+04	2.9750E+01	1.3538E+03	4.5961E+03	1.4202E+05
5.3882E+02	2.4420E+02	1.2079E+06	4.6972E+03	2.0931E+04	6.9667E+01	1.3538E+03	4.2897E+03	1.8553E+05
5.3882E+02	2.1707E+02	2.3082E+06	4.6972E+03	1.8315E+04	2.6333E+02	1.3538E+03	3.9833E+03	2.6632E+05
5.3882E+02	1.8993E+02	3.8409E+06	4.6972E+03	1.5698E+04	1.1674E+04	1.3538E+03	3.6769E+03	3.2494E+05
5.3882E+02	1.6280E+02	5.7309E+06	4.6972E+03	1.3082E+04	3.7364E+04	1.3538E+03	3.3705E+03	4.4843E+05
5.3882E+02	1.3567E+02	7.9934E+06	4.6972E+03	1.0466E+04	3.2049E+04	1.3538E+03	3.0641E+03	7.8562E+05
5.3882E+02	1.0853E+02	9.5670E+06	4.6972E+03	7.8492E+03	1.0075E+05	1.3538E+03	2.7577E+03	8.7966E+05
5.3882E+02	8.1399E+01	1.2651E+07	4.6972E+03	5.2328E+03	1.8966E+05	1.3538E+03	2.4512E+03	1.2098E+06
5.3882E+02	5.4266E+01	1.3891E+07	4.6972E+03	2.6164E+03	3.2849E+05	1.3538E+03	2.1448E+03	1.5181E+06
5.3882E+02	2.7133E+01	1.8011E+07	4.6972E+03	0.0000E+00	4.2525E+06	1.3538E+03	1.8384E+03	1.5114E+06
5.3882E+02	0.0000E+00	3.9195E+07	1.8727E+03	5.4944E+04	4.1667E+01	1.3538E+03	1.5320E+03	1.4779E+06
5.1027E+02	6.5120E+02	3.9513E+03	1.8727E+03	4.9711E+04	9.3335E+00	1.3538E+03	1.2256E+03	1.7254E+06
5.1027E+02	5.9693E+02	5.0710E+03	1.8727E+03	4.4479E+04	8.0917E+01	1.3538E+03	9.1922E+02	1.9065E+06
5.1027E+02	5.6980E+02	1.9816E+04	1.8727E+03	4.1862E+04	4.3417E+01	1.3538E+03	6.1281E+02	2.1316E+06
5.1027E+02	5.4266E+02	3.1610E+04	1.8727E+03	3.9246E+04	4.6417E+01	1.3538E+03	3.0641E+02	6.1383E+06
5.1027E+02	5.1553E+02	2.7965E+04	1.8727E+03	3.6629E+04	5.8495E+01	1.3538E+03	0.0000E+00	1.4073E+07
5.1027E+02	4.8840E+02	8.3707E+04	1.8727E+03	3.4013E+04	1.8989E+03	9.9174E+02	1.1337E+04	2.2461E+03
5.1027E+02	4.6126E+02	5.3644E+04	1.8727E+03	3.1397E+04	3.4968E+03	9.9174E+02	9.1922E+03	6.5790E+01
5.1027E+02	4.3413E+02	4.9916E+04	1.8727E+03	2.8780E+04	2.5873E+04	9.9174E+02	8.8858E+03	9.8386E+02
5.1027E+02	4.0700E+02	8.0132E+04	1.8727E+03	2.6164E+04	3.5317E+04	9.9174E+02	8.5794E+03	7.9620E+03
5.1027E+02	3.7986E+02	5.5693E+04	1.8727E+03	2.3547E+04	6.2787E+04	9.9174E+02	8.2730E+03	1.7500E+00
5.1027E+02	3.5273E+02	1.3225E+05	1.8727E+03	2.0931E+04	3.3439E+04	9.9174E+02	7.9666E+03	3.8219E+02
5.1027E+02	3.2560E+02	1.3147E+05	1.8727E+03	1.8315E+04	1.0669E+05	9.9174E+02	7.3537E+03	1.3283E+02
5.1027E+02	2.9846E+02	2.7538E+05	1.8727E+03	1.5698E+04	1.3859E+05	9.9174E+02	7.0473E+03	1.3508E+02
5.1027E+02	2.7133E+02	3.8176E+05	1.8727E+03	1.3082E+04	2.5642E+05	9.9174E+02	6.7409E+03	6.0510E+03
5.1027E+02	2.4420E+02	9.0576E+05	1.8727E+03	1.0466E+04	4.4511E+05	9.9174E+02	6.4345E+03	4.4303E+04
5.1027E+02	2.1707E+02	1.5979E+06	1.8727E+03	7.8492E+03	1.0763E+06	9.9174E+02	6.1281E+03	1.7070E+04
5.1027E+02	1.8993E+02	2.5446E+06	1.8727E+03	5.2328E+03	2.6077E+06	9.9174E+02	5.8217E+03	4.2605E+04
5.1027E+02	1.6280E+02	3.6368E+06	1.8727E+03	2.6164E+03	3.5221E+06	9.9174E+02	5.5153E+03	8.7015E+04
5.1027E+02	1.3567E+02	5.9279E+06	1.8727E+03	0.0000E+00	1.6238E+07	9.9174E+02	5.2089E+03	9.2622E+04
5.1027E+02	1.0853E+02	7.8003E+06	-9.5167E+02	5.7560E+04	9.3335E+00	9.9174E+02	4.9025E+03	1.5949E+05
5.1027E+02	8.1399E+01	9.4000E+06	-9.5167E+02	5.2328E+04	4.1250E-01	9.9174E+02	4.5961E+03	2.0742E+05
5.1027E+02	5.4266E+01	1.1394E+07	-9.5167E+02	4.4479E+04	4.1250E-01	9.9174E+02	4.2897E+03	4.4164E+05
5.1027E+02	2.7133E+01	1.4474E+07	-9.5167E+02	4.1862E+04	1.1408E+01	9.9174E+02	3.9833E+03	4.0340E+05
5.1027E+02	0.0000E+00	3.1651E+07	-9.5167E+02	3.9246E+04	1.9808E+02	9.9174E+02	3.6769E+03	4.8318E+05
4.8172E+02	7.5973E+02	1.1197E+03	-9.5167E+02	3.6629E+04	9.1178E+03	9.9174E+02	3.3705E+03	6.8857E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
4.8172E+02	7.0546E+02	1.1197E+03	-9.5167E+02	3.4013E+04	3.8198E+03	9.9174E+02	3.0641E+03	8.6092E+05
4.8172E+02	6.7833E+02	3.9513E+03	-9.5167E+02	3.1397E+04	1.8948E+03	9.9174E+02	2.7577E+03	1.3031E+06
4.8172E+02	6.5120E+02	6.1973E+03	-9.5167E+02	2.8780E+04	7.7258E+03	9.9174E+02	2.4512E+03	1.4565E+06
4.8172E+02	6.2406E+02	6.1973E+03	-9.5167E+02	2.6164E+04	4.8796E+03	9.9174E+02	2.1448E+03	1.7801E+06
4.8172E+02	5.9693E+02	2.6488E+04	-9.5167E+02	2.3547E+04	1.3343E+04	9.9174E+02	1.8384E+03	2.4016E+06
4.8172E+02	5.6980E+02	1.5805E+04	-9.5167E+02	2.0931E+04	2.7538E+04	9.9174E+02	1.5320E+03	2.5590E+06
4.8172E+02	5.4266E+02	2.0297E+04	-9.5167E+02	1.8315E+04	5.8009E+04	9.9174E+02	1.2256E+03	2.7434E+06
4.8172E+02	5.1553E+02	2.9905E+04	-9.5167E+02	1.5698E+04	8.6898E+04	9.9174E+02	9.1922E+02	2.6433E+06
4.8172E+02	4.8840E+02	3.1729E+04	-9.5167E+02	1.3082E+04	1.2371E+05	9.9174E+02	6.1281E+02	3.7667E+06
4.8172E+02	4.6126E+02	6.6548E+04	-9.5167E+02	1.0466E+04	2.2318E+05	9.9174E+02	3.0641E+02	8.8356E+06
4.8172E+02	4.3413E+02	7.0362E+04	-9.5167E+02	7.8492E+03	3.6599E+05	9.9174E+02	0.0000E+00	1.8744E+07
4.8172E+02	4.0700E+02	6.4365E+04	-9.5167E+02	5.2328E+03	3.0562E+05	6.2965E+02	1.2256E+04	2.2461E+03
4.8172E+02	3.7986E+02	1.0802E+05	-9.5167E+02	2.6164E+03	2.0929E+05	6.2965E+02	1.0111E+04	2.2394E+03
4.8172E+02	3.5273E+02	1.2062E+05	-9.5167E+02	0.0000E+00	3.9682E+06	6.2965E+02	9.8050E+03	2.2461E+03
4.8172E+02	3.2560E+02	1.5392E+05	-3.7761E+03	1.0466E+05	1.7500E+00	6.2965E+02	9.4986E+03	4.1250E-01
4.8172E+02	2.9846E+02	2.9725E+05	-3.7761E+03	5.7560E+04	4.1250E-01	6.2965E+02	8.5794E+03	1.0417E+00
4.8172E+02	2.7133E+02	4.0755E+05	-3.7761E+03	5.2328E+04	6.7242E+01	6.2965E+02	8.2730E+03	1.3661E+03
4.8172E+02	2.4420E+02	7.3975E+05	-3.7761E+03	4.9711E+04	9.3335E+00	6.2965E+02	7.9666E+03	4.9193E+02
4.8172E+02	2.1707E+02	1.3758E+06	-3.7761E+03	4.7095E+04	7.5825E+01	6.2965E+02	7.6602E+03	5.1552E+02
4.8172E+02	1.8993E+02	2.4896E+06	-3.7761E+03	4.4479E+04	1.8250E+02	6.2965E+02	7.3537E+03	1.2400E+04
4.8172E+02	1.6280E+02	3.5159E+06	-3.7761E+03	4.1862E+04	5.5300E+03	6.2965E+02	7.0473E+03	3.5024E+04
4.8172E+02	1.3567E+02	5.2153E+06	-3.7761E+03	3.9246E+04	1.8703E+02	6.2965E+02	6.7409E+03	1.2414E+04
4.8172E+02	1.0853E+02	6.3715E+06	-3.7761E+03	3.6629E+04	2.0097E+03	6.2965E+02	6.4345E+03	2.1154E+04
4.8172E+02	8.1399E+01	8.1932E+06	-3.7761E+03	3.4013E+04	3.6881E+02	6.2965E+02	6.1281E+03	5.1922E+04
4.8172E+02	5.4266E+01	1.0131E+07	-3.7761E+03	3.1397E+04	5.7981E+03	6.2965E+02	5.8217E+03	8.5811E+04
4.8172E+02	2.7133E+01	1.2404E+07	-3.7761E+03	2.8780E+04	8.2420E+03	6.2965E+02	5.5153E+03	9.8726E+04
4.8172E+02	0.0000E+00	2.7305E+07	-3.7761E+03	2.6164E+04	1.3538E+04	6.2965E+02	5.2089E+03	1.6619E+05
4.5316E+02	7.0546E+02	2.2461E+03	-3.7761E+03	2.3547E+04	9.2689E+03	6.2965E+02	4.9025E+03	2.6111E+05
4.5316E+02	6.7833E+02	4.4921E+03	-3.7761E+03	2.0931E+04	1.7406E+04	6.2965E+02	4.5961E+03	2.8969E+05
4.5316E+02	6.5120E+02	6.1973E+03	-3.7761E+03	1.8315E+04	3.8314E+04	6.2965E+02	4.2897E+03	4.5493E+05
4.5316E+02	6.2406E+02	1.4100E+04	-3.7761E+03	1.5698E+04	6.0373E+04	6.2965E+02	3.9833E+03	7.1816E+05
4.5316E+02	5.9693E+02	1.0208E+04	-3.7761E+03	1.3082E+04	1.4544E+05	6.2965E+02	3.6769E+03	9.4369E+05
4.5316E+02	5.6980E+02	3.2210E+04	-3.7761E+03	1.0466E+04	2.2967E+05	6.2965E+02	3.3705E+03	1.0656E+06
4.5316E+02	5.4266E+02	1.2395E+04	-3.7761E+03	7.8492E+03	4.6050E+05	6.2965E+02	3.0641E+03	1.3282E+06
4.5316E+02	5.1553E+02	1.6887E+04	-3.7761E+03	5.2328E+03	5.3116E+05	6.2965E+02	2.7577E+03	1.6010E+06
4.5316E+02	4.8840E+02	2.8117E+04	-3.7761E+03	2.6164E+03	3.4883E+05	6.2965E+02	2.4512E+03	1.8570E+06
4.5316E+02	4.6126E+02	2.0831E+04	-3.7761E+03	0.0000E+00	4.8394E+06	6.2965E+02	2.1448E+03	2.5042E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
4.5316E+02	4.3413E+02	6.7120E+04	-6.6005E+03	1.2035E+05	1.7500E+00	6.2965E+02	1.8384E+03	2.6997E+06
4.5316E+02	4.0700E+02	7.8901E+04	-6.6005E+03	1.1512E+05	1.7500E+00	6.2965E+02	1.5320E+03	3.4789E+06
4.5316E+02	3.7986E+02	8.6093E+04	-6.6005E+03	1.1250E+05	1.7500E+00	6.2965E+02	1.2256E+03	3.5977E+06
4.5316E+02	3.5273E+02	1.4930E+05	-6.6005E+03	1.0204E+05	1.7500E+00	6.2965E+02	9.1922E+02	3.5368E+06
4.5316E+02	3.2560E+02	1.9676E+05	-6.6005E+03	8.8957E+04	1.7500E+00	6.2965E+02	6.1281E+02	4.8617E+06
4.5316E+02	2.9846E+02	3.0094E+05	-6.6005E+03	5.4944E+04	2.9829E+01	6.2965E+02	3.0641E+02	1.1578E+07
4.5316E+02	2.7133E+02	5.0865E+05	-6.6005E+03	4.9711E+04	4.6907E+01	6.2965E+02	0.0000E+00	2.6673E+07
4.5316E+02	2.4420E+02	8.4233E+05	-6.6005E+03	4.7095E+04	2.0053E+01	2.6757E+02	1.1643E+04	1.1400E+03
4.5316E+02	2.1707E+02	1.5427E+06	-6.6005E+03	4.4479E+04	6.6492E+01	2.6757E+02	9.8050E+03	7.9620E+03
4.5316E+02	1.8993E+02	2.4678E+06	-6.6005E+03	4.1862E+04	4.9750E+00	2.6757E+02	9.4986E+03	2.2394E+03
4.5316E+02	1.6280E+02	3.5656E+06	-6.6005E+03	3.9246E+04	5.8086E+03	2.6757E+02	9.1922E+03	7.6616E+03
4.5316E+02	1.3567E+02	4.5719E+06	-6.6005E+03	3.6629E+04	3.9789E+03	2.6757E+02	8.8858E+03	7.9620E+03
4.5316E+02	1.0853E+02	6.1015E+06	-6.6005E+03	3.4013E+04	3.4363E+02	2.6757E+02	8.5794E+03	1.0201E+04
4.5316E+02	8.1399E+01	7.9613E+06	-6.6005E+03	3.1397E+04	1.7493E+03	2.6757E+02	8.2730E+03	4.8807E+03
4.5316E+02	5.4266E+01	9.7243E+06	-6.6005E+03	2.8780E+04	2.8647E+03	2.6757E+02	7.9666E+03	2.9983E+04
4.5316E+02	2.7133E+01	1.3457E+07	-6.6005E+03	2.6164E+04	5.5306E+03	2.6757E+02	7.6602E+03	3.6888E+03
4.5316E+02	0.0000E+00	2.5012E+07	-6.6005E+03	2.3547E+04	9.5962E+03	2.6757E+02	7.3537E+03	1.8135E+04
4.2461E+02	7.5973E+02	4.4921E+03	-6.6005E+03	2.0931E+04	1.6329E+04	2.6757E+02	7.0473E+03	2.2060E+04
4.2461E+02	7.3259E+02	1.1197E+03	-6.6005E+03	1.8315E+04	3.0598E+04	2.6757E+02	6.7409E+03	8.7564E+04
4.2461E+02	6.5120E+02	2.2394E+03	-6.6005E+03	1.5698E+04	1.6810E+05	2.6757E+02	6.4345E+03	1.4257E+05
4.2461E+02	6.2406E+02	1.3427E+04	-6.6005E+03	1.3082E+04	3.2370E+05	2.6757E+02	6.1281E+03	1.4280E+05
4.2461E+02	5.9693E+02	9.9481E+03	-6.6005E+03	1.0466E+04	4.7257E+05	2.6757E+02	5.8217E+03	1.1598E+05
4.2461E+02	5.6980E+02	7.8579E+03	-6.6005E+03	7.8492E+03	6.7816E+05	2.6757E+02	5.5153E+03	2.0773E+05
4.2461E+02	5.4266E+02	2.5279E+04	-6.6005E+03	5.2328E+03	7.3567E+05	2.6757E+02	5.2089E+03	2.5109E+05
4.2461E+02	5.1553E+02	1.5717E+04	-6.6005E+03	2.6164E+03	3.5594E+05	2.6757E+02	4.9025E+03	2.7165E+05
4.2461E+02	4.8840E+02	1.7428E+04	-6.6005E+03	0.0000E+00	7.3718E+06	2.6757E+02	4.5961E+03	4.4173E+05
4.2461E+02	4.6126E+02	2.2655E+04	-9.4249E+03	1.3082E+05	1.7500E+00	2.6757E+02	4.2897E+03	3.8612E+05
4.2461E+02	4.3413E+02	4.9366E+04	-9.4249E+03	1.2820E+05	1.7500E+00	2.6757E+02	3.9833E+03	4.6392E+05
4.2461E+02	4.0700E+02	6.8712E+04	-9.4249E+03	1.2559E+05	1.7500E+00	2.6757E+02	3.6769E+03	8.7261E+05
4.2461E+02	3.7986E+02	1.7040E+05	-9.4249E+03	1.2297E+05	1.7500E+00	2.6757E+02	3.3705E+03	9.5597E+05
4.2461E+02	3.5273E+02	2.5220E+05	-9.4249E+03	1.1774E+05	1.7500E+00	2.6757E+02	3.0641E+03	1.2759E+06
4.2461E+02	3.2560E+02	2.9407E+05	-9.4249E+03	1.1250E+05	1.7500E+00	2.6757E+02	2.7577E+03	1.5921E+06
4.2461E+02	2.9846E+02	5.4094E+05	-9.4249E+03	1.0204E+05	1.7500E+00	2.6757E+02	2.4512E+03	2.0375E+06
4.2461E+02	2.7133E+02	8.2654E+05	-9.4249E+03	9.9423E+04	1.7500E+00	2.6757E+02	2.1448E+03	2.7781E+06
4.2461E+02	2.4420E+02	1.1295E+06	-9.4249E+03	8.6341E+04	1.7500E+00	2.6757E+02	1.8384E+03	3.5409E+06
4.2461E+02	2.1707E+02	1.6703E+06	-9.4249E+03	8.3724E+04	1.7500E+00	2.6757E+02	1.5320E+03	4.2342E+06
4.2461E+02	1.8993E+02	2.3483E+06	-9.4249E+03	8.1108E+04	1.2500E+00	2.6757E+02	1.2256E+03	4.6099E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
4.2461E+02	1.6280E+02	3.5704E+06	-9.4249E+03	7.5875E+04	1.7500E+00	2.6757E+02	9.1922E+02	4.6723E+06
4.2461E+02	1.3567E+02	4.6022E+06	-9.4249E+03	6.0177E+04	4.1250E-01	2.6757E+02	6.1281E+02	6.5540E+06
4.2461E+02	1.0853E+02	6.3571E+06	-9.4249E+03	5.7560E+04	9.3335E+00	2.6757E+02	3.0641E+02	1.6151E+07
4.2461E+02	8.1399E+01	7.3901E+06	-9.4249E+03	5.4944E+04	8.2500E-01	2.6757E+02	0.0000E+00	3.2300E+07
4.2461E+02	5.4266E+01	9.6947E+06	-9.4249E+03	5.2328E+04	9.3335E+00	-9.4514E+01	1.2869E+04	5.1226E+02
4.2461E+02	2.7133E+01	1.4696E+07	-9.4249E+03	4.9711E+04	2.8992E+01	-9.4514E+01	1.1950E+04	3.8219E+02
4.2461E+02	0.0000E+00	2.5622E+07	-9.4249E+03	4.7095E+04	3.3787E+03	-9.4514E+01	1.1643E+04	1.1197E+03
3.9606E+02	7.5973E+02	4.9193E+02	-9.4249E+03	4.4479E+04	3.3342E+03	-9.4514E+01	1.1337E+04	2.2461E+03
3.9606E+02	7.0546E+02	9.8386E+02	-9.4249E+03	4.1862E+04	1.2580E+02	-9.4514E+01	1.1031E+04	2.2461E+03
3.9606E+02	6.7833E+02	4.9840E+03	-9.4249E+03	3.9246E+04	2.8875E+00	-9.4514E+01	1.0724E+04	3.3658E+03
3.9606E+02	6.2406E+02	1.3108E+03	-9.4249E+03	3.6629E+04	5.5233E+01	-9.4514E+01	1.0418E+04	8.7412E+02
3.9606E+02	5.9693E+02	4.3496E+03	-9.4249E+03	3.4013E+04	3.6657E+01	-9.4514E+01	1.0111E+04	3.4973E+03
3.9606E+02	5.6980E+02	6.5957E+03	-9.4249E+03	3.1397E+04	2.1754E+03	-9.4514E+01	9.8050E+03	7.3103E+03
3.9606E+02	5.4266E+02	1.3657E+04	-9.4249E+03	2.8780E+04	1.8800E+03	-9.4514E+01	9.4986E+03	1.0066E+04
3.9606E+02	5.1553E+02	4.4925E+04	-9.4249E+03	2.6164E+04	5.3515E+03	-9.4514E+01	9.1922E+03	2.4286E+04
3.9606E+02	4.8840E+02	5.0436E+04	-9.4249E+03	2.3547E+04	8.4402E+03	-9.4514E+01	8.8858E+03	3.8163E+04
3.9606E+02	4.6126E+02	4.7741E+04	-9.4249E+03	2.0931E+04	3.5006E+04	-9.4514E+01	8.5794E+03	4.1641E+04
3.9606E+02	4.3413E+02	7.0634E+04	-9.4249E+03	1.8315E+04	1.7504E+04	-9.4514E+01	8.2730E+03	4.6844E+04
3.9606E+02	4.0700E+02	1.0332E+05	-9.4249E+03	1.5698E+04	2.7822E+05	-9.4514E+01	7.9666E+03	2.8282E+04
3.9606E+02	3.7986E+02	1.5280E+05	-9.4249E+03	1.3082E+04	4.2479E+05	-9.4514E+01	7.6602E+03	3.5970E+04
3.9606E+02	3.5273E+02	2.2865E+05	-9.4249E+03	1.0466E+04	8.1920E+05	-9.4514E+01	7.3537E+03	6.5415E+04
3.9606E+02	3.2560E+02	3.2382E+05	-9.4249E+03	7.8492E+03	1.1192E+06	-9.4514E+01	7.0473E+03	4.1117E+04
3.9606E+02	2.9846E+02	4.9476E+05	-9.4249E+03	5.2328E+03	1.4260E+06	-9.4514E+01	6.7409E+03	1.3367E+05
3.9606E+02	2.7133E+02	8.4954E+05	-9.4249E+03	2.6164E+03	5.9703E+05	-9.4514E+01	6.4345E+03	1.4072E+05
3.9606E+02	2.4420E+02	1.1837E+06	-9.4249E+03	0.0000E+00	1.1640E+07	-9.4514E+01	6.1281E+03	1.2833E+05
3.9606E+02	2.1707E+02	1.7361E+06	-1.2249E+04	1.3082E+05	1.7500E+00	-9.4514E+01	5.8217E+03	1.9155E+05
3.9606E+02	1.8993E+02	2.3602E+06	-1.2249E+04	1.2820E+05	3.5000E+00	-9.4514E+01	5.5153E+03	2.3178E+05
3.9606E+02	1.6280E+02	3.4220E+06	-1.2249E+04	1.2559E+05	1.7500E+00	-9.4514E+01	5.2089E+03	2.2216E+05
3.9606E+02	1.3567E+02	4.5942E+06	-1.2249E+04	1.2297E+05	1.0500E+01	-9.4514E+01	4.9025E+03	4.2089E+05
3.9606E+02	1.0853E+02	6.1769E+06	-1.2249E+04	1.2035E+05	3.5000E+00	-9.4514E+01	4.5961E+03	4.0054E+05
3.9606E+02	8.1399E+01	8.3404E+06	-1.2249E+04	1.1774E+05	7.0000E+00	-9.4514E+01	4.2897E+03	6.4078E+05
3.9606E+02	5.4266E+01	1.0507E+07	-1.2249E+04	1.1512E+05	5.2500E+00	-9.4514E+01	3.9833E+03	7.7007E+05
3.9606E+02	2.7133E+01	1.5373E+07	-1.2249E+04	1.1250E+05	1.7500E+00	-9.4514E+01	3.6769E+03	8.5706E+05
3.9606E+02	0.0000E+00	2.6769E+07	-1.2249E+04	1.0727E+05	1.7500E+00	-9.4514E+01	3.3705E+03	1.2067E+06
3.6751E+02	7.8686E+02	4.9193E+02	-1.2249E+04	1.0466E+05	1.7500E+00	-9.4514E+01	3.0641E+03	1.3869E+06
3.6751E+02	6.7833E+02	4.5341E+03	-1.2249E+04	1.0204E+05	3.5000E+00	-9.4514E+01	2.7577E+03	1.8212E+06
3.6751E+02	6.5120E+02	1.6116E+03	-1.2249E+04	9.6806E+04	1.7500E+00	-9.4514E+01	2.4512E+03	2.5453E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
3.6751E+02	6.2406E+02	1.4474E+03	-1.2249E+04	9.4190E+04	1.7500E+00	-9.4514E+01	2.1448E+03	3.3162E+06
3.6751E+02	5.9693E+02	1.2300E+04	-1.2249E+04	8.1108E+04	1.7500E+00	-9.4514E+01	1.8384E+03	3.9368E+06
3.6751E+02	5.6980E+02	1.9532E+04	-1.2249E+04	5.7560E+04	1.8415E+01	-9.4514E+01	1.5320E+03	4.7355E+06
3.6751E+02	5.4266E+02	1.4099E+04	-1.2249E+04	5.4944E+04	6.9073E+01	-9.4514E+01	1.2256E+03	5.4565E+06
3.6751E+02	5.1553E+02	3.2364E+04	-1.2249E+04	5.2328E+04	3.4743E+01	-9.4514E+01	9.1922E+02	5.0291E+06
3.6751E+02	4.8840E+02	2.4767E+04	-1.2249E+04	4.9711E+04	2.0465E+02	-9.4514E+01	6.1281E+02	7.3123E+06
3.6751E+02	4.6126E+02	4.3619E+04	-1.2249E+04	4.7095E+04	8.0486E+01	-9.4514E+01	3.0641E+02	1.7783E+07
3.6751E+02	4.3413E+02	1.3054E+05	-1.2249E+04	4.4479E+04	4.5807E+02	-9.4514E+01	0.0000E+00	4.7742E+07
3.6751E+02	4.0700E+02	1.6222E+05	-1.2249E+04	4.1862E+04	1.9724E+02	-4.5660E+02	1.4401E+04	1.9110E+02
3.6751E+02	3.7986E+02	1.8216E+05	-1.2249E+04	3.9246E+04	4.3395E+02	-4.5660E+02	1.3482E+04	6.8303E+02
3.6751E+02	3.5273E+02	2.9117E+05	-1.2249E+04	3.6629E+04	1.3118E+03	-4.5660E+02	1.2869E+04	1.5019E+03
3.6751E+02	3.2560E+02	3.5580E+05	-1.2249E+04	3.4013E+04	1.1589E+04	-4.5660E+02	1.2563E+04	2.3052E+03
3.6751E+02	2.9846E+02	5.3802E+05	-1.2249E+04	3.1397E+04	1.9374E+04	-4.5660E+02	1.2256E+04	4.9193E+02
3.6751E+02	2.7133E+02	6.7851E+05	-1.2249E+04	2.8780E+04	2.0098E+04	-4.5660E+02	1.1950E+04	6.8303E+02
3.6751E+02	2.4420E+02	1.2039E+06	-1.2249E+04	2.6164E+04	2.4489E+04	-4.5660E+02	1.1643E+04	4.9193E+02
3.6751E+02	2.1707E+02	1.4758E+06	-1.2249E+04	2.3547E+04	5.9745E+04	-4.5660E+02	1.1031E+04	2.2461E+03
3.6751E+02	1.8993E+02	2.2114E+06	-1.2249E+04	2.0931E+04	4.0911E+04	-4.5660E+02	1.0724E+04	4.9193E+02
3.6751E+02	1.6280E+02	2.9245E+06	-1.2249E+04	1.8315E+04	1.8691E+05	-4.5660E+02	1.0418E+04	7.3170E+03
3.6751E+02	1.3567E+02	4.0453E+06	-1.2249E+04	1.5698E+04	5.3120E+05	-4.5660E+02	1.0111E+04	5.4317E+03
3.6751E+02	1.0853E+02	5.6643E+06	-1.2249E+04	1.3082E+04	8.3036E+05	-4.5660E+02	9.8050E+03	2.0357E+04
3.6751E+02	8.1399E+01	6.6572E+06	-1.2249E+04	1.0466E+04	1.2951E+06	-4.5660E+02	9.4986E+03	2.3816E+04
3.6751E+02	5.4266E+01	9.0624E+06	-1.2249E+04	7.8492E+03	2.0861E+06	-4.5660E+02	9.1922E+03	5.1440E+04
3.6751E+02	2.7133E+01	1.4762E+07	-1.2249E+04	5.2328E+03	1.8193E+06	-4.5660E+02	8.8858E+03	7.4206E+04
3.6751E+02	0.0000E+00	2.3531E+07	-1.2249E+04	2.6164E+03	1.1733E+06	-4.5660E+02	8.5794E+03	4.4836E+04
3.3896E+02	8.4113E+02	8.3335E+01	-1.2249E+04	0.0000E+00	1.6351E+07	-4.5660E+02	8.2730E+03	1.1294E+05
3.3896E+02	8.1399E+02	8.3335E+01	-1.5074E+04	1.2559E+05	1.7500E+00	-4.5660E+02	7.9666E+03	1.0296E+05
3.3896E+02	7.5973E+02	8.3335E+01	-1.5074E+04	1.2297E+05	3.5000E+00	-4.5660E+02	7.6602E+03	8.2432E+04
3.3896E+02	7.3259E+02	5.7527E+02	-1.5074E+04	1.2035E+05	7.0000E+00	-4.5660E+02	7.3537E+03	9.8111E+04
3.3896E+02	7.0546E+02	6.8303E+02	-1.5074E+04	1.1774E+05	1.7500E+00	-4.5660E+02	7.0473E+03	1.0869E+05
3.3896E+02	6.7833E+02	1.1750E+03	-1.5074E+04	1.1512E+05	1.7500E+00	-4.5660E+02	6.7409E+03	7.8635E+04
3.3896E+02	6.5120E+02	4.8912E+03	-1.5074E+04	1.1250E+05	7.0000E+00	-4.5660E+02	6.4345E+03	9.0711E+04
3.3896E+02	6.2406E+02	2.8948E+03	-1.5074E+04	1.0989E+05	3.5000E+00	-4.5660E+02	6.1281E+03	8.5281E+04
3.3896E+02	5.9693E+02	6.5874E+03	-1.5074E+04	1.0727E+05	5.2500E+00	-4.5660E+02	5.8217E+03	1.0823E+05
3.3896E+02	5.6980E+02	1.3165E+04	-1.5074E+04	1.0204E+05	1.7500E+00	-4.5660E+02	5.5153E+03	2.9469E+05
3.3896E+02	5.4266E+02	2.2567E+04	-1.5074E+04	9.6806E+04	1.7500E+00	-4.5660E+02	5.2089E+03	2.5803E+05
3.3896E+02	5.1553E+02	2.3400E+04	-1.5074E+04	9.4190E+04	1.7500E+00	-4.5660E+02	4.9025E+03	2.4522E+05
3.3896E+02	4.8840E+02	4.3696E+04	-1.5074E+04	7.0642E+04	5.6745E+01	-4.5660E+02	4.5961E+03	3.9737E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
3.3896E+02	4.6126E+02	7.2636E+04	-1.5074E+04	6.8026E+04	5.8833E+01	-4.5660E+02	4.2897E+03	4.5394E+05
3.3896E+02	4.3413E+02	6.9633E+04	-1.5074E+04	6.5410E+04	1.2500E+00	-4.5660E+02	3.9833E+03	6.5937E+05
3.3896E+02	4.0700E+02	1.3545E+05	-1.5074E+04	6.2793E+04	2.9125E+00	-4.5660E+02	3.6769E+03	9.9140E+05
3.3896E+02	3.7986E+02	1.7621E+05	-1.5074E+04	6.0177E+04	3.3250E+00	-4.5660E+02	3.3705E+03	1.0738E+06
3.3896E+02	3.5273E+02	2.7133E+05	-1.5074E+04	5.4944E+04	1.0340E+02	-4.5660E+02	3.0641E+03	1.4013E+06
3.3896E+02	3.2560E+02	3.4728E+05	-1.5074E+04	5.2328E+04	4.6569E+01	-4.5660E+02	2.7577E+03	1.8430E+06
3.3896E+02	2.9846E+02	4.4973E+05	-1.5074E+04	4.9711E+04	6.2079E+01	-4.5660E+02	2.4512E+03	2.1381E+06
3.3896E+02	2.7133E+02	6.0708E+05	-1.5074E+04	4.7095E+04	5.2356E+02	-4.5660E+02	2.1448E+03	2.8587E+06
3.3896E+02	2.4420E+02	8.6908E+05	-1.5074E+04	4.4479E+04	2.1080E+02	-4.5660E+02	1.8384E+03	3.1234E+06
3.3896E+02	2.1707E+02	1.2097E+06	-1.5074E+04	4.1862E+04	7.4987E+02	-4.5660E+02	1.5320E+03	3.9376E+06
3.3896E+02	1.8993E+02	1.4000E+06	-1.5074E+04	3.9246E+04	6.8316E+02	-4.5660E+02	1.2256E+03	3.9926E+06
3.3896E+02	1.6280E+02	2.0262E+06	-1.5074E+04	3.6629E+04	5.3212E+02	-4.5660E+02	9.1922E+02	3.8159E+06
3.3896E+02	1.3567E+02	2.7867E+06	-1.5074E+04	3.4013E+04	1.6482E+04	-4.5660E+02	6.1281E+02	5.4576E+06
3.3896E+02	1.0853E+02	4.0926E+06	-1.5074E+04	3.1397E+04	2.8148E+04	-4.5660E+02	3.0641E+02	1.3162E+07
3.3896E+02	8.1399E+01	5.1456E+06	-1.5074E+04	2.8780E+04	2.4849E+04	-4.5660E+02	0.0000E+00	2.9041E+07
3.3896E+02	5.4266E+01	7.8707E+06	-1.5074E+04	2.6164E+04	1.0003E+04	-8.1868E+02	1.5014E+04	1.9110E+02
3.3896E+02	2.7133E+01	1.5699E+07	-1.5074E+04	2.3547E+04	3.8877E+04	-8.1868E+02	1.4401E+04	4.9193E+02
3.3896E+02	0.0000E+00	2.1061E+07	-1.5074E+04	2.0931E+04	4.5254E+04	-8.1868E+02	1.4095E+04	4.9193E+02
3.1041E+02	9.7679E+02	5.2085E+00	-1.5074E+04	1.8315E+04	7.7441E+04	-8.1868E+02	1.3788E+04	1.1197E+03
3.1041E+02	9.4966E+02	4.1667E+01	-1.5074E+04	1.5698E+04	1.6218E+05	-8.1868E+02	1.3482E+04	2.5689E+02
3.1041E+02	9.2253E+02	4.1667E+01	-1.5074E+04	1.3082E+04	5.1167E+05	-8.1868E+02	1.3175E+04	1.3158E+02
3.1041E+02	8.9539E+02	4.1667E+01	-1.5074E+04	1.0466E+04	1.0754E+06	-8.1868E+02	1.2563E+04	1.6116E+03
3.1041E+02	8.1399E+02	8.3335E+01	-1.5074E+04	7.8492E+03	1.8690E+06	-8.1868E+02	1.2256E+04	3.8219E+02
3.1041E+02	7.3259E+02	3.8219E+02	-1.5074E+04	5.2328E+03	2.2619E+06	-8.1868E+02	1.1950E+04	4.9193E+02
3.1041E+02	7.0546E+02	6.5790E+01	-1.5074E+04	2.6164E+03	1.4012E+06	-8.1868E+02	1.1643E+04	5.1649E+03
3.1041E+02	6.7833E+02	1.4318E+03	-1.5074E+04	0.0000E+00	1.8369E+07	-8.1868E+02	1.1337E+04	1.3657E+04
3.1041E+02	6.5120E+02	1.3231E+03	-1.7898E+04	8.6341E+04	1.7500E+00	-8.1868E+02	1.1031E+04	2.1036E+03
3.1041E+02	6.2406E+02	2.4129E+03	-1.7898E+04	6.8026E+04	6.0495E+01	-8.1868E+02	1.0724E+04	9.8104E+03
3.1041E+02	5.9693E+02	4.2929E+03	-1.7898E+04	6.5410E+04	6.6320E+01	-8.1868E+02	1.0418E+04	2.3001E+04
3.1041E+02	5.6980E+02	9.0292E+03	-1.7898E+04	6.2793E+04	2.3034E+01	-8.1868E+02	1.0111E+04	2.8167E+04
3.1041E+02	5.4266E+02	6.4939E+03	-1.7898E+04	6.0177E+04	8.3313E+01	-8.1868E+02	9.8050E+03	3.0317E+04
3.1041E+02	5.1553E+02	1.7425E+04	-1.7898E+04	5.7560E+04	5.6951E+01	-8.1868E+02	9.4986E+03	3.2083E+04
3.1041E+02	4.8840E+02	3.7182E+04	-1.7898E+04	5.4944E+04	1.5229E+02	-8.1868E+02	9.1922E+03	4.5221E+04
3.1041E+02	4.6126E+02	3.6286E+04	-1.7898E+04	5.2328E+04	3.5993E+01	-8.1868E+02	8.8858E+03	3.1129E+04
3.1041E+02	4.3413E+02	3.7809E+04	-1.7898E+04	4.9711E+04	2.2099E+02	-8.1868E+02	8.5794E+03	7.3500E+04
3.1041E+02	4.0700E+02	7.0502E+04	-1.7898E+04	4.7095E+04	3.9051E+03	-8.1868E+02	8.2730E+03	3.2904E+04
3.1041E+02	3.7986E+02	8.4537E+04	-1.7898E+04	4.4479E+04	3.0490E+02	-8.1868E+02	7.9666E+03	6.6108E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
3.1041E+02	3.5273E+02	1.2491E+05	-1.7898E+04	4.1862E+04	3.8332E+02	-8.1868E+02	7.6602E+03	5.4713E+04
3.1041E+02	3.2560E+02	1.7633E+05	-1.7898E+04	3.9246E+04	7.1626E+02	-8.1868E+02	7.3537E+03	6.0882E+04
3.1041E+02	2.9846E+02	2.4739E+05	-1.7898E+04	3.6629E+04	8.9280E+03	-8.1868E+02	7.0473E+03	1.0920E+05
3.1041E+02	2.7133E+02	3.5256E+05	-1.7898E+04	3.4013E+04	1.2831E+03	-8.1868E+02	6.7409E+03	8.0952E+04
3.1041E+02	2.4420E+02	4.4715E+05	-1.7898E+04	3.1397E+04	2.5604E+04	-8.1868E+02	6.4345E+03	7.7845E+04
3.1041E+02	2.1707E+02	6.8194E+05	-1.7898E+04	2.8780E+04	4.9048E+03	-8.1868E+02	6.1281E+03	9.2356E+04
3.1041E+02	1.8993E+02	1.0897E+06	-1.7898E+04	2.6164E+04	5.6649E+03	-8.1868E+02	5.8217E+03	1.4468E+05
3.1041E+02	1.6280E+02	1.4875E+06	-1.7898E+04	2.3547E+04	6.8965E+03	-8.1868E+02	5.5153E+03	2.0479E+05
3.1041E+02	1.3567E+02	2.4355E+06	-1.7898E+04	2.0931E+04	7.9917E+03	-8.1868E+02	5.2089E+03	2.2263E+05
3.1041E+02	1.0853E+02	3.7497E+06	-1.7898E+04	1.8315E+04	9.3845E+03	-8.1868E+02	4.9025E+03	2.3329E+05
3.1041E+02	8.1399E+01	4.2513E+06	-1.7898E+04	1.5698E+04	6.7930E+04	-8.1868E+02	4.5961E+03	4.3656E+05
3.1041E+02	5.4266E+01	7.2208E+06	-1.7898E+04	1.3082E+04	1.3326E+05	-8.1868E+02	4.2897E+03	5.2777E+05
3.1041E+02	2.7133E+01	1.5647E+07	-1.7898E+04	1.0466E+04	5.8059E+05	-8.1868E+02	3.9833E+03	5.6154E+05
3.1041E+02	0.0000E+00	1.9857E+07	-1.7898E+04	7.8492E+03	1.2766E+06	-8.1868E+02	3.6769E+03	7.9683E+05
2.8185E+02	1.0039E+03	5.2085E+00	-1.7898E+04	5.2328E+03	1.7433E+06	-8.1868E+02	3.3705E+03	1.1561E+06
2.8185E+02	9.7679E+02	4.1667E+01	-1.7898E+04	2.6164E+03	1.5431E+06	-8.1868E+02	3.0641E+03	1.2130E+06
2.8185E+02	9.4966E+02	5.2085E+00	-1.7898E+04	0.0000E+00	1.7253E+07	-8.1868E+02	2.7577E+03	1.4873E+06
2.8185E+02	9.2253E+02	1.7188E+02	-2.0723E+04	1.1250E+05	5.2085E+00	-8.1868E+02	2.4512E+03	1.7509E+06
2.8185E+02	8.9539E+02	4.1667E+01	-2.0723E+04	1.0727E+05	1.2167E+01	-8.1868E+02	2.1448E+03	2.2484E+06
2.8185E+02	8.6826E+02	1.7500E+00	-2.0723E+04	1.0204E+05	4.6875E+01	-8.1868E+02	1.8384E+03	2.4164E+06
2.8185E+02	7.8686E+02	6.5790E+01	-2.0723E+04	9.9423E+04	5.2085E+00	-8.1868E+02	1.5320E+03	2.7134E+06
2.8185E+02	7.3259E+02	6.5790E+01	-2.0723E+04	9.4190E+04	4.1667E+01	-8.1868E+02	1.2256E+03	2.9229E+06
2.8185E+02	7.0546E+02	4.5467E+02	-2.0723E+04	7.8492E+04	4.1250E-01	-8.1868E+02	9.1922E+02	2.9556E+06
2.8185E+02	6.7833E+02	2.6316E+02	-2.0723E+04	7.5875E+04	1.6625E+00	-8.1868E+02	6.1281E+02	4.1980E+06
2.8185E+02	6.5120E+02	1.9737E+02	-2.0723E+04	6.8026E+04	1.8207E+01	-8.1868E+02	3.0641E+02	9.6427E+06
2.8185E+02	6.2406E+02	1.0120E+03	-2.0723E+04	6.5410E+04	1.9917E+01	-8.1868E+02	0.0000E+00	2.1693E+07
2.8185E+02	5.9693E+02	1.5678E+03	-2.0723E+04	6.2793E+04	1.6965E+02	-1.1808E+03	1.3482E+04	1.1197E+03
2.8185E+02	5.6980E+02	1.3659E+03	-2.0723E+04	6.0177E+04	2.1167E+01	-1.1808E+03	1.3175E+04	4.4798E+02
2.8185E+02	5.4266E+02	1.8904E+03	-2.0723E+04	5.7560E+04	6.2370E+01	-1.1808E+03	1.2869E+04	4.1250E-01
2.8185E+02	5.1553E+02	1.4296E+03	-2.0723E+04	5.4944E+04	3.1250E+00	-1.1808E+03	1.2563E+04	1.3158E+02
2.8185E+02	4.8840E+02	3.0696E+03	-2.0723E+04	5.2328E+04	1.6821E+02	-1.1808E+03	1.2256E+04	2.3787E+03
2.8185E+02	4.6126E+02	3.6606E+03	-2.0723E+04	4.9711E+04	1.3262E+02	-1.1808E+03	1.1950E+04	4.2399E+03
2.8185E+02	4.3413E+02	1.1990E+04	-2.0723E+04	4.7095E+04	3.4330E+01	-1.1808E+03	1.1643E+04	2.7489E+03
2.8185E+02	4.0700E+02	2.1262E+04	-2.0723E+04	4.4479E+04	1.4979E+02	-1.1808E+03	1.1337E+04	1.5019E+03
2.8185E+02	3.7986E+02	2.6773E+04	-2.0723E+04	4.1862E+04	3.8211E+02	-1.1808E+03	1.1031E+04	2.0091E+04
2.8185E+02	3.5273E+02	3.8172E+04	-2.0723E+04	3.9246E+04	7.9402E+02	-1.1808E+03	1.0724E+04	1.2192E+04
2.8185E+02	3.2560E+02	7.2607E+04	-2.0723E+04	3.6629E+04	8.4927E+02	-1.1808E+03	1.0418E+04	2.1438E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.8185E+02	2.9846E+02	7.4968E+04	-2.0723E+04	3.4013E+04	1.5177E+03	-1.1808E+03	1.0111E+04	1.5816E+04
2.8185E+02	2.7133E+02	1.0066E+05	-2.0723E+04	3.1397E+04	2.2763E+03	-1.1808E+03	9.8050E+03	1.7019E+04
2.8185E+02	2.4420E+02	2.0281E+05	-2.0723E+04	2.8780E+04	2.4511E+03	-1.1808E+03	9.4986E+03	1.7172E+04
2.8185E+02	2.1707E+02	3.3772E+05	-2.0723E+04	2.6164E+04	6.5127E+03	-1.1808E+03	9.1922E+03	3.8894E+04
2.8185E+02	1.8993E+02	4.1781E+05	-2.0723E+04	2.3547E+04	6.9312E+03	-1.1808E+03	8.8858E+03	2.7916E+04
2.8185E+02	1.6280E+02	6.4137E+05	-2.0723E+04	2.0931E+04	8.0380E+03	-1.1808E+03	8.5794E+03	4.7512E+04
2.8185E+02	1.3567E+02	1.5382E+06	-2.0723E+04	1.8315E+04	7.2663E+03	-1.1808E+03	8.2730E+03	2.6017E+04
2.8185E+02	1.0853E+02	2.1417E+06	-2.0723E+04	1.5698E+04	4.2744E+04	-1.1808E+03	7.9666E+03	3.6312E+04
2.8185E+02	8.1399E+01	3.0747E+06	-2.0723E+04	1.3082E+04	9.4052E+04	-1.1808E+03	7.6602E+03	4.1932E+04
2.8185E+02	5.4266E+01	5.8116E+06	-2.0723E+04	1.0466E+04	3.9299E+05	-1.1808E+03	7.3537E+03	3.5810E+04
2.8185E+02	2.7133E+01	1.3896E+07	-2.0723E+04	7.8492E+03	1.4533E+06	-1.1808E+03	7.0473E+03	5.2772E+04
2.8185E+02	0.0000E+00	1.7597E+07	-2.0723E+04	5.2328E+03	2.2213E+06	-1.1808E+03	6.7409E+03	6.3257E+04
2.5330E+02	1.1396E+03	5.2085E+00	-2.0723E+04	2.6164E+03	2.4147E+06	-1.1808E+03	6.4345E+03	7.0332E+04
2.5330E+02	1.0853E+03	5.2085E+00	-2.0723E+04	0.0000E+00	1.8710E+07	-1.1808E+03	6.1281E+03	5.1054E+04
2.5330E+02	1.0582E+03	1.7500E+00	-2.3547E+04	1.1512E+05	5.2085E+00	-1.1808E+03	5.8217E+03	1.0121E+05
2.5330E+02	1.0311E+03	5.2085E+00	-2.3547E+04	1.0204E+05	1.7500E+00	-1.1808E+03	5.5153E+03	1.3860E+05
2.5330E+02	1.0039E+03	2.0834E+01	-2.3547E+04	9.6806E+04	2.0834E+01	-1.1808E+03	5.2089E+03	1.7264E+05
2.5330E+02	9.7679E+02	1.5625E+01	-2.3547E+04	9.4190E+04	5.2083E+01	-1.1808E+03	4.9025E+03	2.2895E+05
2.5330E+02	9.4966E+02	5.2085E+00	-2.3547E+04	8.3724E+04	1.7500E+00	-1.1808E+03	4.5961E+03	3.0776E+05
2.5330E+02	9.2253E+02	5.2083E+01	-2.3547E+04	7.5875E+04	1.7500E+00	-1.1808E+03	4.2897E+03	4.4713E+05
2.5330E+02	8.6826E+02	1.2500E+00	-2.3547E+04	7.0642E+04	1.2500E+00	-1.1808E+03	3.9833E+03	5.3061E+05
2.5330E+02	8.1399E+02	2.7042E+00	-2.3547E+04	6.8026E+04	2.5000E+00	-1.1808E+03	3.6769E+03	6.8634E+05
2.5330E+02	7.8686E+02	6.7873E+01	-2.3547E+04	6.5410E+04	1.0417E+00	-1.1808E+03	3.3705E+03	9.1221E+05
2.5330E+02	7.5973E+02	7.6042E+01	-2.3547E+04	6.2793E+04	2.5000E+00	-1.1808E+03	3.0641E+03	1.1674E+06
2.5330E+02	7.3259E+02	3.3333E+00	-2.3547E+04	6.0177E+04	2.0833E+00	-1.1808E+03	2.7577E+03	1.1686E+06
2.5330E+02	7.0546E+02	2.9496E+02	-2.3547E+04	5.7560E+04	7.1827E+01	-1.1808E+03	2.4512E+03	1.4971E+06
2.5330E+02	6.7833E+02	6.5790E+01	-2.3547E+04	5.4944E+04	2.0833E+00	-1.1808E+03	2.1448E+03	1.7846E+06
2.5330E+02	6.5120E+02	3.2895E+02	-2.3547E+04	5.2328E+04	6.5790E+01	-1.1808E+03	1.8384E+03	2.0343E+06
2.5330E+02	6.2406E+02	3.4778E+02	-2.3547E+04	4.7095E+04	1.9737E+02	-1.1808E+03	1.5320E+03	1.8651E+06
2.5330E+02	5.9693E+02	2.8158E+02	-2.3547E+04	4.4479E+04	4.7895E+02	-1.1808E+03	1.2256E+03	2.2959E+06
2.5330E+02	5.6980E+02	6.1385E+02	-2.3547E+04	4.1862E+04	9.2106E+02	-1.1808E+03	9.1922E+02	2.0606E+06
2.5330E+02	5.4266E+02	1.0417E+00	-2.3547E+04	3.9246E+04	4.1524E+02	-1.1808E+03	6.1281E+02	3.1386E+06
2.5330E+02	5.1553E+02	6.8277E+02	-2.3547E+04	3.6629E+04	4.3072E+02	-1.1808E+03	3.0641E+02	7.9324E+06
2.5330E+02	4.8840E+02	1.1721E+03	-2.3547E+04	3.4013E+04	1.1605E+03	-1.1808E+03	0.0000E+00	1.7542E+07
2.5330E+02	4.6126E+02	3.4290E+03	-2.3547E+04	3.1397E+04	9.9055E+02	-1.5428E+03	1.3482E+04	1.9110E+02
2.5330E+02	4.3413E+02	2.5762E+03	-2.3547E+04	2.8780E+04	2.2451E+03	-1.5428E+03	1.3175E+04	9.8386E+02
2.5330E+02	4.0700E+02	4.7830E+03	-2.3547E+04	2.6164E+04	2.4005E+03	-1.5428E+03	1.2869E+04	1.4758E+03

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.5330E+02	3.7986E+02	6.4284E+03	-2.3547E+04	2.3547E+04	2.8878E+03	-1.5428E+03	1.2563E+04	3.2393E+02
2.5330E+02	3.5273E+02	1.0689E+04	-2.3547E+04	2.0931E+04	4.5935E+03	-1.5428E+03	1.2256E+04	2.2394E+03
2.5330E+02	3.2560E+02	2.4786E+04	-2.3547E+04	1.8315E+04	2.6017E+04	-1.5428E+03	1.1950E+04	4.7662E+03
2.5330E+02	2.9846E+02	3.3571E+04	-2.3547E+04	1.5698E+04	6.4544E+04	-1.5428E+03	1.1643E+04	5.4331E+03
2.5330E+02	2.7133E+02	4.0065E+04	-2.3547E+04	1.3082E+04	5.2905E+04	-1.5428E+03	1.1337E+04	6.4050E+03
2.5330E+02	2.4420E+02	8.0576E+04	-2.3547E+04	1.0466E+04	4.1052E+05	-1.5428E+03	1.1031E+04	5.1963E+03
2.5330E+02	2.1707E+02	8.1545E+04	-2.3547E+04	7.8492E+03	9.3827E+05	-1.5428E+03	1.0724E+04	1.7521E+03
2.5330E+02	1.8993E+02	2.3081E+05	-2.3547E+04	5.2328E+03	2.1740E+06	-1.5428E+03	1.0418E+04	4.8282E+03
2.5330E+02	1.6280E+02	4.7331E+05	-2.3547E+04	2.6164E+03	2.0134E+06	-1.5428E+03	1.0111E+04	1.1463E+04
2.5330E+02	1.3567E+02	9.8653E+05	-2.3547E+04	0.0000E+00	1.6169E+07	-1.5428E+03	9.8050E+03	1.5814E+04
2.5330E+02	1.0853E+02	1.5249E+06	-2.6371E+04	1.0466E+05	5.2085E+00	-1.5428E+03	9.4986E+03	2.5055E+04
2.5330E+02	8.1399E+01	2.6330E+06	-2.6371E+04	9.9423E+04	5.2085E+00	-1.5428E+03	9.1922E+03	1.1642E+04
2.5330E+02	5.4266E+01	3.9777E+06	-2.6371E+04	9.6806E+04	5.2085E+00	-1.5428E+03	8.8858E+03	1.2066E+04
2.5330E+02	2.7133E+01	1.1823E+07	-2.6371E+04	9.4190E+04	4.6875E+01	-1.5428E+03	8.5794E+03	2.3818E+03
2.5330E+02	0.0000E+00	1.7163E+07	-2.6371E+04	9.1573E+04	1.4063E+02	-1.5428E+03	8.2730E+03	2.0683E+04
2.2475E+02	1.2481E+03	5.2085E+00	-2.6371E+04	8.8957E+04	5.3833E+01	-1.5428E+03	7.9666E+03	3.0548E+04
2.2475E+02	1.1125E+03	5.2085E+00	-2.6371E+04	8.6341E+04	6.9585E+00	-1.5428E+03	7.6602E+03	2.0651E+04
2.2475E+02	1.0582E+03	5.2085E+00	-2.6371E+04	6.0177E+04	1.0417E+00	-1.5428E+03	7.3537E+03	1.4219E+04
2.2475E+02	1.0311E+03	4.6875E+01	-2.6371E+04	5.7560E+04	2.6316E+02	-1.5428E+03	7.0473E+03	3.7039E+04
2.2475E+02	1.0039E+03	4.1667E+01	-2.6371E+04	5.4944E+04	1.9945E+02	-1.5428E+03	6.7409E+03	3.1600E+04
2.2475E+02	9.7679E+02	4.6875E+01	-2.6371E+04	5.2328E+04	2.6316E+02	-1.5428E+03	6.4345E+03	5.9105E+04
2.2475E+02	9.2253E+02	1.7500E+00	-2.6371E+04	4.9711E+04	6.5790E+01	-1.5428E+03	6.1281E+03	4.9107E+04
2.2475E+02	8.9539E+02	4.1250E-01	-2.6371E+04	4.7095E+04	6.5790E+01	-1.5428E+03	5.8217E+03	8.7530E+04
2.2475E+02	8.6826E+02	1.2500E+00	-2.6371E+04	4.4479E+04	1.3158E+02	-1.5428E+03	5.5153E+03	1.6511E+05
2.2475E+02	8.4113E+02	1.0417E+00	-2.6371E+04	4.1862E+04	2.4886E+02	-1.5428E+03	5.2089E+03	2.3952E+05
2.2475E+02	8.1399E+02	5.6166E+00	-2.6371E+04	3.9246E+04	2.8158E+02	-1.5428E+03	4.9025E+03	2.4756E+05
2.2475E+02	7.8686E+02	7.4202E+01	-2.6371E+04	3.6629E+04	2.6316E+02	-1.5428E+03	4.5961E+03	2.2204E+05
2.2475E+02	7.5973E+02	9.2778E+01	-2.6371E+04	3.4013E+04	1.4383E+03	-1.5428E+03	4.2897E+03	4.2132E+05
2.2475E+02	7.3259E+02	8.6497E+01	-2.6371E+04	3.1397E+04	5.3090E+02	-1.5428E+03	3.9833E+03	4.3828E+05
2.2475E+02	7.0546E+02	2.5698E+01	-2.6371E+04	2.8780E+04	1.4505E+04	-1.5428E+03	3.6769E+03	7.0267E+05
2.2475E+02	6.7833E+02	1.9917E+01	-2.6371E+04	2.6164E+04	1.8161E+03	-1.5428E+03	3.3705E+03	7.6841E+05
2.2475E+02	6.5120E+02	4.1625E+00	-2.6371E+04	2.3547E+04	1.1620E+04	-1.5428E+03	3.0641E+03	8.9540E+05
2.2475E+02	6.2406E+02	2.2641E+02	-2.6371E+04	2.0931E+04	1.2018E+04	-1.5428E+03	2.7577E+03	1.1158E+06
2.2475E+02	5.9693E+02	1.7165E+01	-2.6371E+04	1.8315E+04	2.3343E+04	-1.5428E+03	2.4512E+03	1.1904E+06
2.2475E+02	5.6980E+02	4.0053E+02	-2.6371E+04	1.5698E+04	1.0303E+04	-1.5428E+03	2.1448E+03	1.5384E+06
2.2475E+02	5.4266E+02	7.7693E+02	-2.6371E+04	1.3082E+04	1.2154E+05	-1.5428E+03	1.8384E+03	1.5886E+06
2.2475E+02	5.1553E+02	8.4264E+02	-2.6371E+04	1.0466E+04	3.1299E+05	-1.5428E+03	1.5320E+03	1.4014E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.2475E+02	4.8840E+02	1.6677E+03	-2.6371E+04	7.8492E+03	1.0946E+06	-1.5428E+03	1.2256E+03	1.4452E+06
2.2475E+02	4.6126E+02	1.8914E+03	-2.6371E+04	5.2328E+03	2.2613E+06	-1.5428E+03	9.1922E+02	1.3246E+06
2.2475E+02	4.3413E+02	2.0640E+03	-2.6371E+04	2.6164E+03	3.5585E+06	-1.5428E+03	6.1281E+02	2.5331E+06
2.2475E+02	4.0700E+02	5.1091E+03	-2.6371E+04	0.0000E+00	1.6031E+07	-1.5428E+03	3.0641E+02	6.1770E+06
2.2475E+02	3.7986E+02	5.5774E+03	-2.9196E+04	9.6806E+04	5.2085E+00	-1.5428E+03	0.0000E+00	1.2563E+07
2.2475E+02	3.5273E+02	8.3635E+03	-2.9196E+04	9.1573E+04	1.6667E+02	-1.9049E+03	1.5014E+04	6.5790E+01
2.2475E+02	3.2560E+02	1.0596E+04	-2.9196E+04	8.8957E+04	5.2085E+00	-1.9049E+03	1.4095E+04	1.9110E+02
2.2475E+02	2.9846E+02	1.4977E+04	-2.9196E+04	8.6341E+04	8.3333E+01	-1.9049E+03	1.3175E+04	1.9110E+02
2.2475E+02	2.7133E+02	1.1226E+04	-2.9196E+04	7.8492E+04	8.3335E+01	-1.9049E+03	1.2869E+04	5.3219E+02
2.2475E+02	2.4420E+02	2.7088E+04	-2.9196E+04	6.8026E+04	6.5790E+01	-1.9049E+03	1.2563E+04	8.4733E+02
2.2475E+02	2.1707E+02	8.6689E+04	-2.9196E+04	6.2793E+04	6.5790E+01	-1.9049E+03	1.2256E+04	7.6438E+02
2.2475E+02	1.8993E+02	1.0223E+05	-2.9196E+04	4.9711E+04	6.5790E+01	-1.9049E+03	1.1950E+04	5.7828E+02
2.2475E+02	1.6280E+02	2.3697E+05	-2.9196E+04	4.7095E+04	1.3158E+02	-1.9049E+03	1.1643E+04	3.2716E+03
2.2475E+02	1.3567E+02	6.7394E+05	-2.9196E+04	4.1862E+04	1.9737E+02	-1.9049E+03	1.1337E+04	6.7441E+03
2.2475E+02	1.0853E+02	1.6439E+06	-2.9196E+04	3.9246E+04	1.0944E+03	-1.9049E+03	1.1031E+04	8.4158E+03
2.2475E+02	8.1399E+01	2.5046E+06	-2.9196E+04	3.6629E+04	3.9599E+02	-1.9049E+03	1.0724E+04	4.5129E+03
2.2475E+02	5.4266E+01	3.4035E+06	-2.9196E+04	3.4013E+04	5.9211E+02	-1.9049E+03	1.0418E+04	6.0989E+02
2.2475E+02	2.7133E+01	1.3249E+07	-2.9196E+04	3.1397E+04	1.0815E+04	-1.9049E+03	1.0111E+04	3.1861E+03
2.2475E+02	0.0000E+00	2.0773E+07	-2.9196E+04	2.8780E+04	1.8699E+04	-1.9049E+03	9.8050E+03	6.7786E+03
1.9620E+02	1.1939E+03	5.2085E+00	-2.9196E+04	2.6164E+04	5.9737E+03	-1.9049E+03	9.4986E+03	8.8227E+03
1.9620E+02	1.1396E+03	1.7500E+00	-2.9196E+04	2.3547E+04	1.2894E+04	-1.9049E+03	9.1922E+03	1.0185E+04
1.9620E+02	1.1125E+03	1.7500E+00	-2.9196E+04	2.0931E+04	8.2501E+03	-1.9049E+03	8.8858E+03	6.5853E+03
1.9620E+02	1.0853E+03	1.7500E+00	-2.9196E+04	1.8315E+04	2.0103E+04	-1.9049E+03	8.5794E+03	1.2260E+04
1.9620E+02	1.0582E+03	4.6875E+01	-2.9196E+04	1.5698E+04	5.4078E+04	-1.9049E+03	8.2730E+03	7.7057E+03
1.9620E+02	9.2253E+02	3.0000E+00	-2.9196E+04	1.3082E+04	6.8864E+04	-1.9049E+03	7.9666E+03	9.2470E+03
1.9620E+02	8.9539E+02	4.1250E-01	-2.9196E+04	1.0466E+04	4.6857E+05	-1.9049E+03	7.6602E+03	1.2658E+04
1.9620E+02	8.6826E+02	5.7583E+01	-2.9196E+04	7.8492E+03	1.2650E+06	-1.9049E+03	7.3537E+03	2.6539E+04
1.9620E+02	8.4113E+02	4.1250E-01	-2.9196E+04	5.2328E+03	2.7203E+06	-1.9049E+03	7.0473E+03	1.8135E+04
1.9620E+02	8.1399E+02	5.8408E+01	-2.9196E+04	2.6164E+03	5.0110E+06	-1.9049E+03	6.7409E+03	3.6700E+04
1.9620E+02	7.8686E+02	7.7500E+01	-2.9196E+04	0.0000E+00	1.7876E+07	-1.9049E+03	6.4345E+03	3.6450E+04
1.9620E+02	7.5973E+02	2.9125E+00	-3.2020E+04	7.5875E+04	1.6667E+02	-1.9049E+03	6.1281E+03	6.9570E+04
1.9620E+02	7.3259E+02	1.2500E+00	-3.2020E+04	4.9711E+04	6.3908E+02	-1.9049E+03	5.8217E+03	4.0567E+04
1.9620E+02	7.0546E+02	2.7042E+00	-3.2020E+04	4.7095E+04	3.8219E+02	-1.9049E+03	5.5153E+03	1.4220E+05
1.9620E+02	6.7833E+02	2.7042E+00	-3.2020E+04	4.4479E+04	9.2435E+03	-1.9049E+03	5.2089E+03	1.5673E+05
1.9620E+02	6.5120E+02	1.8207E+01	-3.2020E+04	4.1862E+04	1.0584E+04	-1.9049E+03	4.9025E+03	1.9484E+05
1.9620E+02	6.2406E+02	1.0012E+02	-3.2020E+04	3.9246E+04	1.9274E+03	-1.9049E+03	4.5961E+03	1.8219E+05
1.9620E+02	5.9693E+02	1.8708E+02	-3.2020E+04	3.6629E+04	2.1179E+04	-1.9049E+03	4.2897E+03	2.5643E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.9620E+02	5.6980E+02	1.8667E+00	-3.2020E+04	3.4013E+04	3.7297E+03	-1.9049E+03	3.9833E+03	4.6812E+05
1.9620E+02	5.4266E+02	5.6352E+02	-3.2020E+04	3.1397E+04	1.2407E+04	-1.9049E+03	3.6769E+03	3.9041E+05
1.9620E+02	5.1553E+02	3.9227E+02	-3.2020E+04	2.8780E+04	2.3466E+04	-1.9049E+03	3.3705E+03	7.0285E+05
1.9620E+02	4.8840E+02	1.5446E+03	-3.2020E+04	2.6164E+04	2.2645E+04	-1.9049E+03	3.0641E+03	7.1990E+05
1.9620E+02	4.6126E+02	1.7449E+03	-3.2020E+04	2.3547E+04	4.6798E+04	-1.9049E+03	2.7577E+03	9.8080E+05
1.9620E+02	4.3413E+02	1.8940E+03	-3.2020E+04	2.0931E+04	6.8860E+04	-1.9049E+03	2.4512E+03	1.0528E+06
1.9620E+02	4.0700E+02	3.4425E+03	-3.2020E+04	1.8315E+04	8.4312E+04	-1.9049E+03	2.1448E+03	1.1340E+06
1.9620E+02	3.7986E+02	7.2145E+03	-3.2020E+04	1.5698E+04	1.2507E+05	-1.9049E+03	1.8384E+03	9.1559E+05
1.9620E+02	3.5273E+02	2.2189E+04	-3.2020E+04	1.3082E+04	2.3945E+05	-1.9049E+03	1.5320E+03	1.0742E+06
1.9620E+02	3.2560E+02	1.7101E+04	-3.2020E+04	1.0466E+04	5.5091E+05	-1.9049E+03	1.2256E+03	1.2742E+06
1.9620E+02	2.9846E+02	8.3609E+03	-3.2020E+04	7.8492E+03	1.7062E+06	-1.9049E+03	9.1922E+02	1.2197E+06
1.9620E+02	2.7133E+02	1.4189E+04	-3.2020E+04	5.2328E+03	4.0296E+06	-1.9049E+03	6.1281E+02	1.7732E+06
1.9620E+02	2.4420E+02	1.1547E+04	-3.2020E+04	2.6164E+03	6.9989E+06	-1.9049E+03	3.0641E+02	5.0483E+06
1.9620E+02	2.1707E+02	3.6044E+04	-3.2020E+04	0.0000E+00	2.0923E+07	-1.9049E+03	0.0000E+00	1.0137E+07
1.9620E+02	1.8993E+02	1.1201E+05	-3.4845E+04	8.3724E+04	8.3335E+01	-2.2670E+03	1.5320E+04	6.5790E+01
1.9620E+02	1.6280E+02	2.8235E+05	-3.4845E+04	7.8492E+04	8.3335E+01	-2.2670E+03	1.3788E+04	1.1855E+03
1.9620E+02	1.3567E+02	7.1132E+05	-3.4845E+04	4.9711E+04	1.1750E+03	-2.2670E+03	1.2869E+04	4.9422E+02
1.9620E+02	1.0853E+02	1.2589E+06	-3.4845E+04	4.7095E+04	9.1767E+03	-2.2670E+03	1.2563E+04	8.7516E+02
1.9620E+02	8.1399E+01	2.1009E+06	-3.4845E+04	4.4479E+04	1.3821E+04	-2.2670E+03	1.1950E+04	1.4474E+03
1.9620E+02	5.4266E+01	2.5955E+06	-3.4845E+04	4.1862E+04	1.2012E+04	-2.2670E+03	1.1337E+04	7.7476E+02
1.9620E+02	2.7133E+01	1.3954E+07	-3.4845E+04	3.9246E+04	1.4804E+04	-2.2670E+03	1.1031E+04	2.8324E+02
1.9620E+02	0.0000E+00	2.4285E+07	-3.4845E+04	3.6629E+04	1.4635E+04	-2.2670E+03	1.0724E+04	9.3195E+02
1.6765E+02	1.2753E+03	5.2500E+00	-3.4845E+04	3.4013E+04	2.2346E+04	-2.2670E+03	1.0418E+04	8.7723E+02
1.6765E+02	1.2481E+03	3.5000E+00	-3.4845E+04	3.1397E+04	2.2894E+04	-2.2670E+03	1.0111E+04	9.8182E+02
1.6765E+02	1.2210E+03	1.7500E+00	-3.4845E+04	2.8780E+04	5.0447E+04	-2.2670E+03	9.8050E+03	5.1283E+03
1.6765E+02	1.1939E+03	3.5000E+00	-3.4845E+04	2.6164E+04	5.2185E+04	-2.2670E+03	9.4986E+03	2.3340E+03
1.6765E+02	1.1396E+03	3.5000E+00	-3.4845E+04	2.3547E+04	1.1246E+05	-2.2670E+03	9.1922E+03	3.3589E+03
1.6765E+02	1.1125E+03	3.5000E+00	-3.4845E+04	2.0931E+04	1.3461E+05	-2.2670E+03	8.8858E+03	2.3086E+03
1.6765E+02	1.0582E+03	3.5000E+00	-3.4845E+04	1.8315E+04	1.7408E+05	-2.2670E+03	8.5794E+03	4.9017E+03
1.6765E+02	1.0311E+03	5.2500E+00	-3.4845E+04	1.5698E+04	2.5711E+05	-2.2670E+03	8.2730E+03	1.8809E+03
1.6765E+02	9.7679E+02	1.7500E+00	-3.4845E+04	1.3082E+04	3.8896E+05	-2.2670E+03	7.9666E+03	8.3311E+03
1.6765E+02	9.4966E+02	1.2500E+00	-3.4845E+04	1.0466E+04	7.8081E+05	-2.2670E+03	7.6602E+03	6.7593E+03
1.6765E+02	8.6826E+02	1.2500E+00	-3.4845E+04	7.8492E+03	2.1325E+06	-2.2670E+03	7.3537E+03	2.0928E+04
1.6765E+02	8.4113E+02	4.1250E-01	-3.4845E+04	5.2328E+03	4.8134E+06	-2.2670E+03	7.0473E+03	1.2549E+04
1.6765E+02	7.8686E+02	1.6625E+00	-3.4845E+04	2.6164E+03	9.0324E+06	-2.2670E+03	6.7409E+03	1.7803E+04
1.6765E+02	7.5973E+02	1.2500E+00	-3.4845E+04	0.0000E+00	2.1836E+07	-2.2670E+03	6.4345E+03	3.6795E+04
1.6765E+02	7.3259E+02	2.5000E+00	-3.7669E+04	5.7560E+04	1.1041E+04	-2.2670E+03	6.1281E+03	3.0330E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.6765E+02	7.0546E+02	1.2500E+00	-3.7669E+04	5.2328E+04	4.9193E+02	-2.2670E+03	5.8217E+03	8.8382E+04
1.6765E+02	6.5120E+02	1.6625E+00	-3.7669E+04	4.9711E+04	4.9193E+02	-2.2670E+03	5.5153E+03	7.6714E+04
1.6765E+02	6.2406E+02	1.1729E+02	-3.7669E+04	4.7095E+04	9.2864E+03	-2.2670E+03	5.2089E+03	1.2034E+05
1.6765E+02	5.9693E+02	2.8031E+02	-3.7669E+04	4.4479E+04	3.0891E+03	-2.2670E+03	4.9025E+03	1.4790E+05
1.6765E+02	5.6980E+02	1.3157E+02	-3.7669E+04	4.1862E+04	1.5843E+04	-2.2670E+03	4.5961E+03	2.0182E+05
1.6765E+02	5.4266E+02	2.6435E+02	-3.7669E+04	3.9246E+04	1.2669E+04	-2.2670E+03	4.2897E+03	1.7773E+05
1.6765E+02	5.1553E+02	7.8139E+02	-3.7669E+04	3.6629E+04	2.1470E+04	-2.2670E+03	3.9833E+03	3.8567E+05
1.6765E+02	4.8840E+02	6.9692E+02	-3.7669E+04	3.4013E+04	2.4585E+04	-2.2670E+03	3.6769E+03	3.9799E+05
1.6765E+02	4.6126E+02	4.7462E+03	-3.7669E+04	3.1397E+04	4.9309E+04	-2.2670E+03	3.3705E+03	3.9436E+05
1.6765E+02	4.3413E+02	1.4159E+03	-3.7669E+04	2.8780E+04	1.0708E+05	-2.2670E+03	3.0641E+03	5.5617E+05
1.6765E+02	4.0700E+02	1.3983E+03	-3.7669E+04	2.6164E+04	7.5956E+04	-2.2670E+03	2.7577E+03	5.0458E+05
1.6765E+02	3.7986E+02	3.9532E+03	-3.7669E+04	2.3547E+04	1.4491E+05	-2.2670E+03	2.4512E+03	8.1525E+05
1.6765E+02	3.5273E+02	3.4379E+04	-3.7669E+04	2.0931E+04	2.1658E+05	-2.2670E+03	2.1448E+03	9.0312E+05
1.6765E+02	3.2560E+02	2.4173E+04	-3.7669E+04	1.8315E+04	2.6719E+05	-2.2670E+03	1.8384E+03	8.4881E+05
1.6765E+02	2.9846E+02	1.6742E+04	-3.7669E+04	1.5698E+04	3.2104E+05	-2.2670E+03	1.5320E+03	7.8665E+05
1.6765E+02	2.7133E+02	3.6339E+04	-3.7669E+04	1.3082E+04	4.4845E+05	-2.2670E+03	1.2256E+03	7.7929E+05
1.6765E+02	2.4420E+02	1.4954E+04	-3.7669E+04	1.0466E+04	9.6371E+05	-2.2670E+03	9.1922E+02	9.8689E+05
1.6765E+02	2.1707E+02	4.7296E+04	-3.7669E+04	7.8492E+03	2.4783E+06	-2.2670E+03	6.1281E+02	1.7025E+06
1.6765E+02	1.8993E+02	1.1352E+05	-3.7669E+04	5.2328E+03	5.7349E+06	-2.2670E+03	3.0641E+02	4.4037E+06
1.6765E+02	1.6280E+02	3.3990E+05	-3.7669E+04	2.6164E+03	1.0849E+07	-2.2670E+03	0.0000E+00	7.5310E+06
1.6765E+02	1.3567E+02	8.9420E+05	-3.7669E+04	0.0000E+00	2.0517E+07	-2.6291E+03	1.4707E+04	6.5790E+01
1.6765E+02	1.0853E+02	1.7946E+06	-4.0493E+04	5.7560E+04	4.9193E+02	-2.6291E+03	1.4095E+04	6.6202E+01
1.6765E+02	8.1399E+01	2.2342E+06	-4.0493E+04	5.2328E+04	4.9193E+02	-2.6291E+03	1.2256E+04	4.9193E+02
1.6765E+02	5.4266E+01	2.1627E+06	-4.0493E+04	4.9711E+04	1.6116E+03	-2.6291E+03	1.1950E+04	6.7452E+01
1.6765E+02	2.7133E+01	1.2878E+07	-4.0493E+04	4.7095E+04	2.7313E+03	-2.6291E+03	1.1643E+04	2.1558E+02
1.6765E+02	0.0000E+00	2.8711E+07	-4.0493E+04	4.4479E+04	1.1197E+03	-2.6291E+03	1.1337E+04	3.6579E+02
1.3910E+02	1.3024E+03	1.7500E+00	-4.0493E+04	4.1862E+04	1.6116E+03	-2.6291E+03	1.1031E+04	2.4887E+02
1.3910E+02	1.2481E+03	1.7500E+00	-4.0493E+04	3.9246E+04	4.9707E+03	-2.6291E+03	1.0724E+04	2.5855E+02
1.3910E+02	1.2210E+03	5.2500E+00	-4.0493E+04	3.6629E+04	1.0631E+04	-2.6291E+03	1.0418E+04	8.0051E+02
1.3910E+02	1.1939E+03	3.5000E+00	-4.0493E+04	3.4013E+04	2.9388E+04	-2.6291E+03	1.0111E+04	7.9912E+02
1.3910E+02	1.1667E+03	7.0000E+00	-4.0493E+04	3.1397E+04	3.2550E+04	-2.6291E+03	9.8050E+03	1.5942E+03
1.3910E+02	1.1396E+03	3.5000E+00	-4.0493E+04	2.8780E+04	6.2612E+04	-2.6291E+03	9.4986E+03	7.1603E+02
1.3910E+02	1.1125E+03	1.7500E+00	-4.0493E+04	2.6164E+04	8.0985E+04	-2.6291E+03	9.1922E+03	1.2148E+03
1.3910E+02	1.0853E+03	1.7500E+00	-4.0493E+04	2.3547E+04	1.1559E+05	-2.6291E+03	8.8858E+03	1.4882E+03
1.3910E+02	1.0582E+03	1.7500E+00	-4.0493E+04	2.0931E+04	1.4978E+05	-2.6291E+03	8.5794E+03	4.3310E+03
1.3910E+02	1.0311E+03	1.7500E+00	-4.0493E+04	1.8315E+04	2.3896E+05	-2.6291E+03	8.2730E+03	2.8692E+03
1.3910E+02	9.7679E+02	1.7500E+00	-4.0493E+04	1.5698E+04	4.0090E+05	-2.6291E+03	7.9666E+03	1.0767E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.3910E+02	9.4966E+02	3.5000E+00	-4.0493E+04	1.3082E+04	5.4326E+05	-2.6291E+03	7.6602E+03	1.2845E+04
1.3910E+02	8.1399E+02	1.7500E+00	-4.0493E+04	1.0466E+04	1.1220E+06	-2.6291E+03	7.3537E+03	3.6666E+03
1.3910E+02	7.8686E+02	1.2500E+00	-4.0493E+04	7.8492E+03	2.9468E+06	-2.6291E+03	7.0473E+03	8.8657E+03
1.3910E+02	7.0546E+02	1.2500E+00	-4.0493E+04	5.2328E+03	7.1703E+06	-2.6291E+03	6.7409E+03	3.5728E+03
1.3910E+02	6.5120E+02	1.7165E+01	-4.0493E+04	2.6164E+03	1.5413E+07	-2.6291E+03	6.4345E+03	9.5860E+03
1.3910E+02	6.2406E+02	1.7578E+01	-4.0493E+04	0.0000E+00	2.4830E+07	-2.6291E+03	6.1281E+03	3.0513E+04
1.3910E+02	5.9693E+02	5.1495E+01	-4.3318E+04	6.2793E+04	1.1197E+03	-2.6291E+03	5.8217E+03	2.4043E+04
1.3910E+02	5.6980E+02	5.3822E+01	-4.3318E+04	5.2328E+04	1.6116E+03	-2.6291E+03	5.5153E+03	7.5912E+04
1.3910E+02	5.4266E+02	3.5267E+02	-4.3318E+04	4.9711E+04	1.1034E+04	-2.6291E+03	5.2089E+03	5.3288E+04
1.3910E+02	5.1553E+02	1.5974E+02	-4.3318E+04	4.7095E+04	1.2154E+04	-2.6291E+03	4.9025E+03	1.1977E+05
1.3910E+02	4.8840E+02	1.2556E+02	-4.3318E+04	4.4479E+04	7.7220E+03	-2.6291E+03	4.5961E+03	1.0785E+05
1.3910E+02	4.6126E+02	3.1361E+02	-4.3318E+04	4.1862E+04	9.4695E+03	-2.6291E+03	4.2897E+03	1.2283E+05
1.3910E+02	4.3413E+02	2.7946E+02	-4.3318E+04	3.9246E+04	1.8892E+04	-2.6291E+03	3.9833E+03	2.8428E+05
1.3910E+02	4.0700E+02	1.0237E+03	-4.3318E+04	3.6629E+04	1.7819E+04	-2.6291E+03	3.6769E+03	2.6268E+05
1.3910E+02	3.7986E+02	1.7920E+03	-4.3318E+04	3.4013E+04	2.1321E+04	-2.6291E+03	3.3705E+03	3.3312E+05
1.3910E+02	3.5273E+02	8.9735E+03	-4.3318E+04	3.1397E+04	2.2447E+04	-2.6291E+03	3.0641E+03	5.8591E+05
1.3910E+02	3.2560E+02	1.0710E+04	-4.3318E+04	2.8780E+04	4.5878E+04	-2.6291E+03	2.7577E+03	4.5682E+05
1.3910E+02	2.9846E+02	3.5982E+04	-4.3318E+04	2.6164E+04	6.9296E+04	-2.6291E+03	2.4512E+03	6.4682E+05
1.3910E+02	2.7133E+02	4.3153E+04	-4.3318E+04	2.3547E+04	8.7577E+04	-2.6291E+03	2.1448E+03	7.7383E+05
1.3910E+02	2.4420E+02	9.2052E+04	-4.3318E+04	2.0931E+04	1.5221E+05	-2.6291E+03	1.8384E+03	6.8946E+05
1.3910E+02	2.1707E+02	1.3729E+05	-4.3318E+04	1.8315E+04	2.1795E+05	-2.6291E+03	1.5320E+03	7.2647E+05
1.3910E+02	1.8993E+02	3.2521E+05	-4.3318E+04	1.5698E+04	3.4512E+05	-2.6291E+03	1.2256E+03	7.0805E+05
1.3910E+02	1.6280E+02	7.9290E+05	-4.3318E+04	1.3082E+04	6.4728E+05	-2.6291E+03	9.1922E+02	8.5498E+05
1.3910E+02	1.3567E+02	1.3917E+06	-4.3318E+04	1.0466E+04	1.4159E+06	-2.6291E+03	6.1281E+02	1.2694E+06
1.3910E+02	1.0853E+02	2.1495E+06	-4.3318E+04	7.8492E+03	3.3740E+06	-2.6291E+03	3.0641E+02	3.0759E+06
1.3910E+02	8.1399E+01	2.1137E+06	-4.3318E+04	5.2328E+03	7.3281E+06	-2.6291E+03	0.0000E+00	6.0084E+06
1.3910E+02	5.4266E+01	1.7706E+06	-4.3318E+04	2.6164E+03	1.6273E+07	-2.9912E+03	1.2563E+04	6.5790E+01
1.3910E+02	2.7133E+01	1.1369E+07	-4.3318E+04	0.0000E+00	2.5013E+07	-2.9912E+03	1.2256E+04	1.1197E+03
1.3910E+02	0.0000E+00	2.8777E+07	-4.6142E+04	7.0642E+04	2.2461E+03	-2.9912E+03	1.1950E+04	6.5790E+01
1.1054E+02	1.3567E+03	1.7500E+00	-4.6142E+04	4.9711E+04	9.0817E+03	-2.9912E+03	1.1643E+04	1.9737E+02
1.1054E+02	1.3024E+03	5.2500E+00	-4.6142E+04	4.7095E+04	5.6052E+03	-2.9912E+03	1.1337E+04	1.6695E+02
1.1054E+02	1.2481E+03	1.7500E+00	-4.6142E+04	4.4479E+04	3.3658E+03	-2.9912E+03	1.1031E+04	4.0563E+02
1.1054E+02	1.1939E+03	3.5000E+00	-4.6142E+04	4.1862E+04	1.1230E+04	-2.9912E+03	1.0724E+04	1.9110E+02
1.1054E+02	1.1667E+03	3.5000E+00	-4.6142E+04	3.9246E+04	2.5637E+04	-2.9912E+03	1.0418E+04	7.0060E+02
1.1054E+02	1.1396E+03	1.7500E+00	-4.6142E+04	3.6629E+04	6.7315E+03	-2.9912E+03	1.0111E+04	9.1011E+02
1.1054E+02	1.1125E+03	1.7500E+00	-4.6142E+04	3.4013E+04	2.0787E+04	-2.9912E+03	9.8050E+03	1.6632E+02
1.1054E+02	1.0853E+03	1.7500E+00	-4.6142E+04	3.1397E+04	1.1230E+04	-2.9912E+03	9.4986E+03	2.9977E+02

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.1054E+02	1.0582E+03	1.7500E+00	-4.6142E+04	2.8780E+04	3.0929E+04	-2.9912E+03	9.1922E+03	1.9087E+03
1.1054E+02	1.0311E+03	1.7500E+00	-4.6142E+04	2.6164E+04	8.0509E+04	-2.9912E+03	8.8858E+03	6.5321E+02
1.1054E+02	1.0039E+03	1.7500E+00	-4.6142E+04	2.3547E+04	1.3888E+05	-2.9912E+03	8.5794E+03	3.5845E+03
1.1054E+02	9.7679E+02	1.2500E+00	-4.6142E+04	2.0931E+04	1.1454E+05	-2.9912E+03	8.2730E+03	2.4108E+03
1.1054E+02	9.4966E+02	1.7500E+00	-4.6142E+04	1.8315E+04	1.8755E+05	-2.9912E+03	7.9666E+03	2.0751E+03
1.1054E+02	8.6826E+02	1.7500E+00	-4.6142E+04	1.5698E+04	3.2165E+05	-2.9912E+03	7.6602E+03	4.2335E+03
1.1054E+02	8.4113E+02	1.7500E+00	-4.6142E+04	1.3082E+04	4.5140E+05	-2.9912E+03	7.3537E+03	1.8378E+03
1.1054E+02	7.3259E+02	4.1250E-01	-4.6142E+04	1.0466E+04	1.1018E+06	-2.9912E+03	7.0473E+03	4.3080E+03
1.1054E+02	6.2406E+02	4.1250E-01	-4.6142E+04	7.8492E+03	3.3698E+06	-2.9912E+03	6.7409E+03	2.7124E+03
1.1054E+02	5.9693E+02	8.2500E-01	-4.6142E+04	5.2328E+03	7.0828E+06	-2.9912E+03	6.4345E+03	1.3169E+04
1.1054E+02	5.6980E+02	4.1250E-01	-4.6142E+04	2.6164E+03	1.5682E+07	-2.9912E+03	6.1281E+03	3.4014E+04
1.1054E+02	5.4266E+02	2.8579E+01	-4.6142E+04	0.0000E+00	2.2394E+07	-2.9912E+03	5.8217E+03	2.2168E+04
1.1054E+02	5.1553E+02	3.7070E+01	-4.8967E+04	5.4944E+04	2.2461E+03	-2.9912E+03	5.5153E+03	2.1885E+04
1.1054E+02	4.8840E+02	1.3389E+02	-4.8967E+04	5.2328E+04	1.0208E+04	-2.9912E+03	5.2089E+03	2.4849E+04
1.1054E+02	4.6126E+02	3.3578E+03	-4.8967E+04	4.9711E+04	2.2461E+03	-2.9912E+03	4.9025E+03	8.8686E+04
1.1054E+02	4.3413E+02	3.7183E+03	-4.8967E+04	4.7095E+04	2.2461E+03	-2.9912E+03	4.5961E+03	7.6721E+04
1.1054E+02	4.0700E+02	1.6421E+02	-4.8967E+04	4.4479E+04	1.9875E+04	-2.9912E+03	4.2897E+03	1.3233E+05
1.1054E+02	3.7986E+02	5.4277E+03	-4.8967E+04	4.1862E+04	2.0838E+04	-2.9912E+03	3.9833E+03	9.8636E+04
1.1054E+02	3.5273E+02	9.7357E+02	-4.8967E+04	3.9246E+04	2.3084E+04	-2.9912E+03	3.6769E+03	1.9370E+05
1.1054E+02	3.2560E+02	3.9607E+03	-4.8967E+04	3.6629E+04	1.8592E+04	-2.9912E+03	3.3705E+03	1.7978E+05
1.1054E+02	2.9846E+02	1.3063E+04	-4.8967E+04	3.4013E+04	2.9281E+04	-2.9912E+03	3.0641E+03	1.7890E+05
1.1054E+02	2.7133E+02	9.0088E+03	-4.8967E+04	3.1397E+04	4.8498E+04	-2.9912E+03	2.7577E+03	3.3506E+05
1.1054E+02	2.4420E+02	6.3824E+04	-4.8967E+04	2.8780E+04	3.6643E+04	-2.9912E+03	2.4512E+03	3.6292E+05
1.1054E+02	2.1707E+02	9.5830E+04	-4.8967E+04	2.6164E+04	5.8645E+04	-2.9912E+03	2.1448E+03	3.8800E+05
1.1054E+02	1.8993E+02	2.9789E+05	-4.8967E+04	2.3547E+04	9.7701E+04	-2.9912E+03	1.8384E+03	5.6901E+05
1.1054E+02	1.6280E+02	4.5288E+05	-4.8967E+04	2.0931E+04	8.0277E+04	-2.9912E+03	1.5320E+03	4.4848E+05
1.1054E+02	1.3567E+02	9.2993E+05	-4.8967E+04	1.8315E+04	1.8636E+05	-2.9912E+03	1.2256E+03	4.7618E+05
1.1054E+02	1.0853E+02	1.4981E+06	-4.8967E+04	1.5698E+04	2.2003E+05	-2.9912E+03	9.1922E+02	5.7177E+05
1.1054E+02	8.1399E+01	1.6682E+06	-4.8967E+04	1.3082E+04	3.7548E+05	-2.9912E+03	6.1281E+02	1.0098E+06
1.1054E+02	5.4266E+01	1.1150E+06	-4.8967E+04	1.0466E+04	1.0209E+06	-2.9912E+03	3.0641E+02	2.1244E+06
1.1054E+02	2.7133E+01	8.5682E+06	-4.8967E+04	7.8492E+03	2.8715E+06	-2.9912E+03	0.0000E+00	4.4642E+06
1.1054E+02	0.0000E+00	2.3708E+07	-4.8967E+04	5.2328E+03	6.5848E+06	-3.3533E+03	1.2563E+04	1.7165E+01
8.1993E+01	1.3024E+03	1.7500E+00	-4.8967E+04	2.6164E+03	1.4591E+07	-3.3533E+03	1.2256E+04	1.2500E+00
8.1993E+01	1.2210E+03	1.7500E+00	-4.8967E+04	0.0000E+00	2.0710E+07	-3.3533E+03	1.1950E+04	6.5790E+01
8.1993E+01	1.1939E+03	3.5000E+00	-5.1791E+04	6.0177E+04	2.2461E+03	-3.3533E+03	1.1031E+04	1.4874E+02
8.1993E+01	7.8686E+02	1.7500E+00	-5.1791E+04	5.4944E+04	1.1197E+03	-3.3533E+03	1.0724E+04	3.5993E+01
8.1993E+01	7.5973E+02	1.2500E+00	-5.1791E+04	5.2328E+04	1.1268E+04	-3.3533E+03	1.0418E+04	1.0012E+02

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
8.1993E+01	6.5120E+02	4.1250E-01	-5.1791E+04	4.9711E+04	7.9025E+03	-3.3533E+03	1.0111E+04	2.1003E+02
8.1993E+01	5.4266E+02	2.9329E+01	-5.1791E+04	4.7095E+04	1.3033E+04	-3.3533E+03	9.8050E+03	7.7148E+02
8.1993E+01	5.1553E+02	1.0158E+01	-5.1791E+04	4.4479E+04	1.8051E+04	-3.3533E+03	9.4986E+03	3.1492E+01
8.1993E+01	4.8840E+02	3.0654E+01	-5.1791E+04	4.1862E+04	3.2151E+04	-3.3533E+03	9.1922E+03	1.1816E+03
8.1993E+01	4.6126E+02	9.1392E+01	-5.1791E+04	3.9246E+04	2.0357E+04	-3.3533E+03	8.8858E+03	2.0690E+02
8.1993E+01	4.3413E+02	1.5553E+02	-5.1791E+04	3.6629E+04	1.8592E+04	-3.3533E+03	8.5794E+03	7.5418E+02
8.1993E+01	4.0700E+02	4.2593E+03	-5.1791E+04	3.4013E+04	8.3335E-02	-3.3533E+03	8.2730E+03	1.2474E+03
8.1993E+01	3.7986E+02	6.0189E+03	-5.1791E+04	3.1397E+04	4.9097E+04	-3.3533E+03	7.9666E+03	1.3865E+02
8.1993E+01	3.5273E+02	4.9074E+02	-5.1791E+04	2.8780E+04	5.9269E+04	-3.3533E+03	7.6602E+03	9.4828E+02
8.1993E+01	3.2560E+02	2.9485E+03	-5.1791E+04	2.6164E+04	1.0668E+05	-3.3533E+03	7.3537E+03	1.2384E+03
8.1993E+01	2.9846E+02	5.0412E+03	-5.1791E+04	2.3547E+04	4.7422E+04	-3.3533E+03	7.0473E+03	1.3494E+04
8.1993E+01	2.7133E+02	7.0930E+03	-5.1791E+04	2.0931E+04	1.1203E+05	-3.3533E+03	6.7409E+03	6.4659E+03
8.1993E+01	2.4420E+02	1.2455E+04	-5.1791E+04	1.8315E+04	6.4981E+04	-3.3533E+03	6.4345E+03	9.1983E+03
8.1993E+01	2.1707E+02	2.8605E+04	-5.1791E+04	1.5698E+04	1.5549E+05	-3.3533E+03	6.1281E+03	9.7452E+03
8.1993E+01	1.8993E+02	7.6829E+04	-5.1791E+04	1.3082E+04	2.7022E+05	-3.3533E+03	5.8217E+03	6.7434E+03
8.1993E+01	1.6280E+02	3.6845E+05	-5.1791E+04	1.0466E+04	9.4975E+05	-3.3533E+03	5.5153E+03	1.6776E+04
8.1993E+01	1.3567E+02	4.8587E+05	-5.1791E+04	7.8492E+03	3.0632E+06	-3.3533E+03	5.2089E+03	1.2041E+04
8.1993E+01	1.0853E+02	6.5547E+05	-5.1791E+04	5.2328E+03	6.3978E+06	-3.3533E+03	4.9025E+03	2.8351E+04
8.1993E+01	8.1399E+01	9.3632E+05	-5.1791E+04	2.6164E+03	1.6008E+07	-3.3533E+03	4.5961E+03	5.8765E+04
8.1993E+01	5.4266E+01	6.4457E+05	-5.1791E+04	0.0000E+00	2.1376E+07	-3.3533E+03	4.2897E+03	5.7610E+04
8.1993E+01	2.7133E+01	5.1218E+06	-5.4615E+04	5.4944E+04	3.9513E+03	-3.3533E+03	3.9833E+03	9.7500E+04
8.1993E+01	0.0000E+00	1.6096E+07	-5.4615E+04	5.2328E+04	3.9513E+03	-3.3533E+03	3.6769E+03	9.0862E+04
5.3442E+01	1.0853E+03	1.7500E+00	-5.4615E+04	4.9711E+04	1.1854E+04	-3.3533E+03	3.3705E+03	1.3637E+05
5.3442E+01	5.9693E+02	5.6333E+01	-5.4615E+04	4.7095E+04	6.1973E+03	-3.3533E+03	3.0641E+03	1.4381E+05
5.3442E+01	5.6980E+02	3.9987E+01	-5.4615E+04	4.4479E+04	2.7718E+04	-3.3533E+03	2.7577E+03	2.2945E+05
5.3442E+01	5.1553E+02	4.1625E+00	-5.4615E+04	4.1862E+04	3.9632E+04	-3.3533E+03	2.4512E+03	2.0572E+05
5.3442E+01	4.8840E+02	4.0825E+01	-5.4615E+04	3.9246E+04	1.5865E+04	-3.3533E+03	2.1448E+03	2.8123E+05
5.3442E+01	4.6126E+02	9.3900E+01	-5.4615E+04	3.6629E+04	7.5377E+04	-3.3533E+03	1.8384E+03	3.0860E+05
5.3442E+01	4.3413E+02	2.0176E+03	-5.4615E+04	3.4013E+04	5.7602E+04	-3.3533E+03	1.5320E+03	2.5548E+05
5.3442E+01	4.0700E+02	1.9874E+03	-5.4615E+04	3.1397E+04	1.1868E+04	-3.3533E+03	1.2256E+03	2.4527E+05
5.3442E+01	3.7986E+02	3.6818E+03	-5.4615E+04	2.8780E+04	3.7720E+04	-3.3533E+03	9.1922E+02	3.2045E+05
5.3442E+01	3.5273E+02	3.9523E+03	-5.4615E+04	2.6164E+04	5.9644E+04	-3.3533E+03	6.1281E+02	4.5907E+05
5.3442E+01	3.2560E+02	3.9804E+03	-5.4615E+04	2.3547E+04	8.2907E+04	-3.3533E+03	3.0641E+02	1.4669E+06
5.3442E+01	2.9846E+02	5.1635E+03	-5.4615E+04	2.0931E+04	8.4147E+04	-3.3533E+03	0.0000E+00	3.0292E+06
5.3442E+01	2.7133E+02	1.4463E+04	-5.4615E+04	1.8315E+04	1.2023E+05	-3.7154E+03	1.2869E+04	6.5790E+01
5.3442E+01	2.4420E+02	2.5266E+04	-5.4615E+04	1.5698E+04	1.3813E+05	-3.7154E+03	1.2563E+04	6.6202E+01
5.3442E+01	2.1707E+02	2.9813E+04	-5.4615E+04	1.3082E+04	4.2044E+05	-3.7154E+03	1.2256E+04	1.7165E+01

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
5.3442E+01	1.8993E+02	4.4593E+04	-5.4615E+04	1.0466E+04	1.0201E+06	-3.7154E+03	1.1643E+04	3.4330E+01
5.3442E+01	1.6280E+02	1.1867E+05	-5.4615E+04	7.8492E+03	3.1593E+06	-3.7154E+03	1.0724E+04	1.2500E+00
5.3442E+01	1.3567E+02	2.2106E+05	-5.4615E+04	5.2328E+03	7.5351E+06	-3.7154E+03	1.0418E+04	1.9110E+02
5.3442E+01	1.0853E+02	4.6049E+05	-5.4615E+04	2.6164E+03	1.7807E+07	-3.7154E+03	1.0111E+04	2.1328E+01
5.3442E+01	8.1399E+01	6.0062E+05	-5.4615E+04	0.0000E+00	2.4221E+07	-3.7154E+03	9.8050E+03	1.7165E+01
5.3442E+01	5.4266E+01	4.3544E+05	-5.7440E+04	4.9711E+04	3.9513E+03	-3.7154E+03	9.4986E+03	2.9125E+00
5.3442E+01	2.7133E+01	3.0078E+06	-5.7440E+04	4.7095E+04	8.3335E-02	-3.7154E+03	9.1922E+03	2.8161E+01
5.3442E+01	0.0000E+00	1.1806E+07	-5.7440E+04	4.4479E+04	7.9025E+03	-3.7154E+03	8.8858E+03	1.6016E+02
2.4890E+01	1.1667E+03	1.7500E+00	-5.7440E+04	4.1862E+04	7.9620E+03	-3.7154E+03	8.5794E+03	3.4330E+01
2.4890E+01	6.2406E+02	9.3335E+00	-5.7440E+04	3.9246E+04	3.8173E+04	-3.7154E+03	8.2730E+03	3.8343E+02
2.4890E+01	5.6980E+02	4.1250E-01	-5.7440E+04	3.6629E+04	4.0252E+04	-3.7154E+03	7.9666E+03	4.1693E+02
2.4890E+01	5.4266E+02	1.2500E+00	-5.7440E+04	3.4013E+04	2.1859E+04	-3.7154E+03	7.6602E+03	1.8064E+03
2.4890E+01	5.1553E+02	1.6500E+00	-5.7440E+04	3.1397E+04	8.6481E+04	-3.7154E+03	7.3537E+03	6.1847E+02
2.4890E+01	4.8840E+02	1.2500E+00	-5.7440E+04	2.8780E+04	7.1902E+04	-3.7154E+03	7.0473E+03	1.1577E+03
2.4890E+01	4.6126E+02	5.9658E+01	-5.7440E+04	2.6164E+04	9.6491E+04	-3.7154E+03	6.7409E+03	3.1261E+03
2.4890E+01	4.3413E+02	6.4817E+01	-5.7440E+04	2.3547E+04	1.6311E+05	-3.7154E+03	6.4345E+03	2.1831E+03
2.4890E+01	4.0700E+02	1.5632E+02	-5.7440E+04	2.0931E+04	1.2857E+05	-3.7154E+03	6.1281E+03	2.5136E+03
2.4890E+01	3.7986E+02	1.8896E+03	-5.7440E+04	1.8315E+04	1.1421E+05	-3.7154E+03	5.8217E+03	3.0428E+03
2.4890E+01	3.5273E+02	7.3437E+03	-5.7440E+04	1.5698E+04	3.4436E+05	-3.7154E+03	5.5153E+03	2.4362E+03
2.4890E+01	3.2560E+02	1.9637E+03	-5.7440E+04	1.3082E+04	5.3619E+05	-3.7154E+03	5.2089E+03	2.4384E+04
2.4890E+01	2.9846E+02	1.6649E+04	-5.7440E+04	1.0466E+04	1.6693E+06	-3.7154E+03	4.9025E+03	1.8538E+04
2.4890E+01	2.7133E+02	2.3289E+04	-5.7440E+04	7.8492E+03	3.7594E+06	-3.7154E+03	4.5961E+03	1.3846E+04
2.4890E+01	2.4420E+02	3.6920E+04	-5.7440E+04	5.2328E+03	9.3052E+06	-3.7154E+03	4.2897E+03	2.0645E+04
2.4890E+01	2.1707E+02	6.6573E+04	-5.7440E+04	2.6164E+03	2.3099E+07	-3.7154E+03	3.9833E+03	4.9425E+04
2.4890E+01	1.8993E+02	1.1559E+05	-5.7440E+04	0.0000E+00	3.1263E+07	-3.7154E+03	3.6769E+03	2.8097E+04
2.4890E+01	1.6280E+02	1.5609E+05	-6.0264E+04	4.7095E+04	1.6667E-01	-3.7154E+03	3.3705E+03	9.6621E+04
2.4890E+01	1.3567E+02	2.6955E+05	-6.0264E+04	4.1862E+04	1.6667E-01	-3.7154E+03	3.0641E+03	9.7553E+04
2.4890E+01	1.0853E+02	2.8869E+05	-6.0264E+04	3.9246E+04	5.2918E+00	-3.7154E+03	2.7577E+03	6.0329E+04
2.4890E+01	8.1399E+01	3.8447E+05	-6.0264E+04	3.6629E+04	2.2185E+04	-3.7154E+03	2.4512E+03	8.5449E+04
2.4890E+01	5.4266E+01	3.3359E+05	-6.0264E+04	3.4013E+04	4.2362E+04	-3.7154E+03	2.1448E+03	7.5222E+04
2.4890E+01	2.7133E+01	1.7164E+06	-6.0264E+04	3.1397E+04	9.0375E+04	-3.7154E+03	1.8384E+03	1.3120E+05
2.4890E+01	0.0000E+00	1.7879E+07	-6.0264E+04	2.8780E+04	1.3495E+05	-3.7154E+03	1.5320E+03	1.7048E+05
-3.6615E+00	5.9693E+02	5.2250E+01	-6.0264E+04	2.6164E+04	1.2685E+05	-3.7154E+03	1.2256E+03	1.5044E+05
-3.6615E+00	5.4266E+02	1.2500E+00	-6.0264E+04	2.3547E+04	2.9516E+05	-3.7154E+03	9.1922E+02	2.0146E+05
-3.6615E+00	4.8840E+02	2.5000E+00	-6.0264E+04	2.0931E+04	3.0455E+05	-3.7154E+03	6.1281E+02	3.8343E+05
-3.6615E+00	4.6126E+02	4.4167E+01	-6.0264E+04	1.8315E+04	5.9283E+05	-3.7154E+03	3.0641E+02	9.3594E+05
-3.6615E+00	4.3413E+02	9.8412E+01	-6.0264E+04	1.5698E+04	8.2044E+05	-3.7154E+03	0.0000E+00	1.9954E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-3.6615E+00	4.0700E+02	1.1642E+02	-6.0264E+04	1.3082E+04	1.6932E+06	-4.0774E+03	1.1337E+04	4.1250E-01
-3.6615E+00	3.7986E+02	4.1625E+00	-6.0264E+04	1.0466E+04	2.2520E+06	-4.0774E+03	1.0724E+04	2.9125E+00
-3.6615E+00	3.5273E+02	1.1575E+01	-6.0264E+04	7.8492E+03	5.3773E+06	-4.0774E+03	1.0418E+04	3.3250E+00
-3.6615E+00	3.2560E+02	1.8683E+02	-6.0264E+04	5.2328E+03	1.2440E+07	-4.0774E+03	1.0111E+04	2.5000E+00
-3.6615E+00	2.9846E+02	5.9742E+01	-6.0264E+04	2.6164E+03	3.0724E+07	-4.0774E+03	9.4986E+03	1.7165E+01
-3.6615E+00	2.7133E+02	3.1743E+04	-6.0264E+04	0.0000E+00	3.9488E+07	-4.0774E+03	8.8858E+03	2.6524E+02
-3.6615E+00	2.4420E+02	3.4523E+04	-6.3089E+04	4.7095E+04	6.0500E+03	-4.0774E+03	8.5794E+03	1.5000E+02
-3.6615E+00	2.1707E+02	1.5426E+04	-6.3089E+04	4.4479E+04	6.0500E+03	-4.0774E+03	7.9666E+03	2.0232E+02
-3.6615E+00	1.8993E+02	3.1700E+04	-6.3089E+04	3.6629E+04	1.6667E-01	-4.0774E+03	7.6602E+03	3.4330E+01
-3.6615E+00	1.6280E+02	9.3771E+04	-6.3089E+04	3.4013E+04	1.6667E-01	-4.0774E+03	7.3537E+03	3.8219E+02
-3.6615E+00	1.3567E+02	1.6713E+05	-6.3089E+04	3.1397E+04	6.0502E+03	-4.0774E+03	7.0473E+03	4.4283E+02
-3.6615E+00	1.0853E+02	3.3122E+05	-6.3089E+04	2.8780E+04	6.0576E+03	-4.0774E+03	6.7409E+03	2.4382E+03
-3.6615E+00	8.1399E+01	9.5507E+05	-6.3089E+04	2.6164E+04	4.8086E+04	-4.0774E+03	6.4345E+03	4.9906E+03
-3.6615E+00	5.4266E+01	2.9208E+06	-6.3089E+04	2.3547E+04	7.6645E+04	-4.0774E+03	6.1281E+03	3.3323E+03
-3.6615E+00	2.7133E+01	4.6091E+06	-6.3089E+04	2.0931E+04	1.7621E+05	-4.0774E+03	5.8217E+03	1.7093E+03
-3.6615E+00	0.0000E+00	4.0379E+07	-6.3089E+04	1.8315E+04	3.7793E+05	-4.0774E+03	5.5153E+03	9.5013E+03
-3.2213E+01	5.1553E+02	4.1667E+01	-6.3089E+04	1.5698E+04	7.4742E+05	-4.0774E+03	5.2089E+03	1.4281E+03
-3.2213E+01	4.8840E+02	4.1250E-01	-6.3089E+04	1.3082E+04	1.4822E+06	-4.0774E+03	4.9025E+03	6.3294E+03
-3.2213E+01	4.3413E+02	1.2500E+00	-6.3089E+04	1.0466E+04	3.0485E+06	-4.0774E+03	4.5961E+03	1.2293E+04
-3.2213E+01	4.0700E+02	5.2500E+00	-6.3089E+04	7.8492E+03	5.6295E+06	-4.0774E+03	4.2897E+03	2.1198E+04
-3.2213E+01	3.7986E+02	5.2500E+00	-6.3089E+04	5.2328E+03	1.2340E+07	-4.0774E+03	3.9833E+03	1.1554E+04
-3.2213E+01	3.5273E+02	3.5917E+01	-6.3089E+04	2.6164E+03	3.0255E+07	-4.0774E+03	3.6769E+03	1.7485E+04
-3.2213E+01	3.2560E+02	1.3075E+01	-6.3089E+04	0.0000E+00	3.8941E+07	-4.0774E+03	3.3705E+03	4.8715E+04
-3.2213E+01	2.9846E+02	2.0000E+01	-6.5913E+04	4.1862E+04	6.0500E+03	-4.0774E+03	3.0641E+03	3.4050E+04
-3.2213E+01	2.7133E+02	1.4000E+01	-6.5913E+04	3.6629E+04	6.0500E+03	-4.0774E+03	2.7577E+03	3.5579E+04
-3.2213E+01	2.4420E+02	1.1908E+02	-6.5913E+04	2.3547E+04	7.9620E+03	-4.0774E+03	2.4512E+03	3.5110E+04
-3.2213E+01	2.1707E+02	2.6183E+02	-6.5913E+04	2.0931E+04	1.2100E+04	-4.0774E+03	2.1448E+03	3.8508E+04
-3.2213E+01	1.8993E+02	7.0389E+03	-6.5913E+04	1.8315E+04	7.2600E+04	-4.0774E+03	1.8384E+03	6.3109E+04
-3.2213E+01	1.6280E+02	3.9199E+03	-6.5913E+04	1.5698E+04	2.2364E+05	-4.0774E+03	1.5320E+03	3.5157E+04
-3.2213E+01	1.3567E+02	3.0451E+04	-6.5913E+04	1.3082E+04	6.8637E+05	-4.0774E+03	1.2256E+03	8.2474E+04
-3.2213E+01	1.0853E+02	3.3111E+04	-6.5913E+04	1.0466E+04	1.1080E+06	-4.0774E+03	9.1922E+02	8.4198E+04
-3.2213E+01	8.1399E+01	4.9701E+04	-6.5913E+04	7.8492E+03	2.3474E+06	-4.0774E+03	6.1281E+02	2.2046E+05
-3.2213E+01	5.4266E+01	5.1961E+04	-6.5913E+04	5.2328E+03	6.9312E+06	-4.0774E+03	3.0641E+02	4.5062E+05
-3.2213E+01	2.7133E+01	2.2653E+05	-6.5913E+04	2.6164E+03	1.8198E+07	-4.0774E+03	0.0000E+00	1.0347E+06
-3.2213E+01	0.0000E+00	5.9643E+06	-6.5913E+04	0.0000E+00	2.5080E+07	-4.4395E+03	1.1643E+04	4.1250E-01
-6.0765E+01	6.2406E+02	1.2500E+00	-6.8738E+04	2.3547E+04	6.0500E+03	-4.4395E+03	1.1337E+04	1.2500E+00
-6.0765E+01	5.9693E+02	1.7500E+00	-6.8738E+04	1.8315E+04	1.6667E-01	-4.4395E+03	1.1031E+04	8.2500E-01

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-6.0765E+01	5.6980E+02	1.7500E+00	-6.8738E+04	1.3082E+04	4.6183E+04	-4.4395E+03	9.1922E+03	1.3158E+02
-6.0765E+01	5.4266E+02	4.1667E+01	-6.8738E+04	1.0466E+04	1.4032E+05	-4.4395E+03	7.9666E+03	2.5000E+00
-6.0765E+01	3.7986E+02	3.5000E+00	-6.8738E+04	7.8492E+03	3.8121E+05	-4.4395E+03	7.6602E+03	2.6316E+02
-6.0765E+01	3.5273E+02	1.2250E+01	-6.8738E+04	5.2328E+03	2.1339E+06	-4.4395E+03	7.0473E+03	5.1495E+01
-6.0765E+01	3.2560E+02	7.7500E+00	-6.8738E+04	2.6164E+03	6.3831E+06	-4.4395E+03	6.7409E+03	1.9192E+02
-6.0765E+01	2.9846E+02	5.5667E+01	-6.8738E+04	0.0000E+00	8.7941E+06	-4.4395E+03	6.4345E+03	1.6006E+03
-6.0765E+01	2.7133E+02	1.7325E+01	-7.1562E+04	1.3082E+04	1.7500E+00	-4.4395E+03	6.1281E+03	5.8659E+02
-6.0765E+01	2.4420E+02	1.3916E+02	-7.1562E+04	1.0466E+04	7.9639E+03	-4.4395E+03	5.8217E+03	3.3020E+03
-6.0765E+01	2.1707E+02	8.6492E+01	-7.1562E+04	7.8492E+03	7.9758E+04	-4.4395E+03	5.5153E+03	3.7886E+03
-6.0765E+01	1.8993E+02	5.4807E+02	-7.1562E+04	5.2328E+03	3.2042E+05	-4.4395E+03	5.2089E+03	8.5450E+03
-6.0765E+01	1.6280E+02	2.1393E+03	-7.1562E+04	2.6164E+03	1.4269E+06	-4.4395E+03	4.9025E+03	2.4682E+03
-6.0765E+01	1.3567E+02	4.3224E+02	-7.1562E+04	0.0000E+00	2.1478E+06	-4.4395E+03	4.5961E+03	5.5557E+03
-6.0765E+01	1.0853E+02	1.0785E+04	-7.4386E+04	7.8492E+03	2.2584E+01	-4.4395E+03	4.2897E+03	2.9675E+03
-6.0765E+01	8.1399E+01	1.9234E+04	-7.4386E+04	5.2328E+03	5.1627E+04	-4.4395E+03	3.9833E+03	8.4576E+03
-6.0765E+01	5.4266E+01	1.4918E+04	-7.4386E+04	2.6164E+03	3.1393E+05	-4.4395E+03	3.6769E+03	8.9790E+03
-6.0765E+01	2.7133E+01	9.5598E+04	-7.4386E+04	0.0000E+00	4.0230E+05	-4.4395E+03	3.3705E+03	2.1046E+04
-6.0765E+01	0.0000E+00	1.0525E+06	-7.7211E+04	7.8492E+03	4.4921E+03	-4.4395E+03	3.0641E+03	2.5235E+04
-8.9316E+01	5.4266E+02	3.5000E+00	-7.7211E+04	5.2328E+03	1.0417E+01	-4.4395E+03	2.7577E+03	1.2070E+04
-8.9316E+01	4.8840E+02	1.7500E+00	-7.7211E+04	2.6164E+03	6.6668E-01	-4.4395E+03	2.4512E+03	1.8604E+04
-8.9316E+01	4.6126E+02	3.5000E+00	-7.7211E+04	0.0000E+00	1.3759E+05	-4.4395E+03	2.1448E+03	1.3673E+04
-8.9316E+01	4.3413E+02	3.5000E+00	-8.0035E+04	5.2328E+03	1.2395E+04	-4.4395E+03	1.8384E+03	1.5177E+04
-8.9316E+01	3.7986E+02	7.0000E+00	-8.0035E+04	2.6164E+03	4.4203E+04	-4.4395E+03	1.5320E+03	1.2707E+04
-8.9316E+01	3.5273E+02	1.7500E+00	-8.0035E+04	0.0000E+00	2.0003E+04	-4.4395E+03	1.2256E+03	2.1361E+04
-8.9316E+01	3.2560E+02	5.2500E+00	-8.2860E+04	2.6164E+03	1.6667E-01	-4.4395E+03	9.1922E+02	4.4637E+04
-8.9316E+01	2.9846E+02	4.1000E+01	-8.2860E+04	0.0000E+00	1.6667E-01	-4.4395E+03	6.1281E+02	5.9687E+04
-8.9316E+01	2.7133E+02	3.5917E+01				-4.4395E+03	3.0641E+02	2.7939E+05
-8.9316E+01	2.4420E+02	8.6417E+01				-4.4395E+03	0.0000E+00	5.8578E+05
-8.9316E+01	2.1707E+02	1.0066E+02				-4.8016E+03	1.3175E+04	4.1250E-01
-8.9316E+01	1.8993E+02	9.0333E+01				-4.8016E+03	1.2869E+04	1.6625E+00
-8.9316E+01	1.6280E+02	2.8983E+02				-4.8016E+03	1.1031E+04	1.6625E+00
-8.9316E+01	1.3567E+02	2.2274E+02				-4.8016E+03	9.8050E+03	1.3158E+02
-8.9316E+01	1.0853E+02	2.3024E+02				-4.8016E+03	7.9666E+03	2.5000E+00
-8.9316E+01	8.1399E+01	9.2665E+02				-4.8016E+03	7.3537E+03	6.5790E+01
-8.9316E+01	5.4266E+01	9.2974E+02				-4.8016E+03	6.4345E+03	6.8290E+01
-8.9316E+01	2.7133E+01	3.4363E+04				-4.8016E+03	6.1281E+03	1.6674E+02
-8.9316E+01	0.0000E+00	2.5854E+05				-4.8016E+03	5.8217E+03	5.2611E+03
-1.1787E+02	5.6980E+02	5.2500E+00				-4.8016E+03	5.5153E+03	2.6056E+03

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-1.1787E+02	5.4266E+02	5.2500E+00				-4.8016E+03	5.2089E+03	1.1853E+03
-1.1787E+02	4.8840E+02	1.7500E+00				-4.8016E+03	4.9025E+03	7.1401E+02
-1.1787E+02	4.6126E+02	1.7500E+00				-4.8016E+03	4.5961E+03	5.9498E+02
-1.1787E+02	4.3413E+02	1.7500E+00				-4.8016E+03	4.2897E+03	1.6635E+03
-1.1787E+02	4.0700E+02	1.7500E+00				-4.8016E+03	3.9833E+03	1.1308E+04
-1.1787E+02	3.7986E+02	1.7500E+00				-4.8016E+03	3.6769E+03	7.7437E+02
-1.1787E+02	3.5273E+02	1.7500E+00				-4.8016E+03	3.3705E+03	8.0221E+03
-1.1787E+02	2.4420E+02	3.5000E+00				-4.8016E+03	3.0641E+03	1.1287E+04
-1.1787E+02	2.1707E+02	1.0500E+01				-4.8016E+03	2.7577E+03	1.4681E+04
-1.1787E+02	1.6280E+02	7.0000E+00				-4.8016E+03	2.4512E+03	1.5388E+04
-1.1787E+02	1.3567E+02	1.8242E+01				-4.8016E+03	2.1448E+03	9.8100E+03
-1.1787E+02	1.0853E+02	1.8917E+01				-4.8016E+03	1.8384E+03	3.0307E+03
-1.1787E+02	8.1399E+01	1.4691E+02				-4.8016E+03	1.5320E+03	2.1113E+04
-1.1787E+02	5.4266E+01	4.3673E+02				-4.8016E+03	1.2256E+03	5.3516E+03
-1.1787E+02	2.7133E+01	1.9602E+03				-4.8016E+03	9.1922E+02	2.6562E+04
-1.1787E+02	0.0000E+00	6.7825E+04				-4.8016E+03	6.1281E+02	3.8110E+04
-1.4642E+02	6.5120E+02	3.5000E+00				-4.8016E+03	3.0641E+02	1.4628E+05
-1.4642E+02	6.2406E+02	5.2500E+00				-4.8016E+03	0.0000E+00	3.1788E+05
-1.4642E+02	5.9693E+02	3.5000E+00				-5.1637E+03	1.2256E+04	1.2500E+00
-1.4642E+02	5.6980E+02	1.7500E+00				-5.1637E+03	7.9666E+03	8.2500E-01
-1.4642E+02	5.4266E+02	1.7500E+00				-5.1637E+03	6.1281E+03	1.1167E+03
-1.4642E+02	5.1553E+02	3.5000E+00				-5.1637E+03	5.8217E+03	1.6591E+02
-1.4642E+02	4.8840E+02	1.7500E+00				-5.1637E+03	5.5153E+03	2.5000E+00
-1.4642E+02	4.6126E+02	1.7500E+00				-5.1637E+03	5.2089E+03	3.6830E+01
-1.4642E+02	4.3413E+02	1.7500E+00				-5.1637E+03	4.9025E+03	2.9749E+02
-1.4642E+02	4.0700E+02	3.5000E+00				-5.1637E+03	4.5961E+03	6.4535E+02
-1.4642E+02	2.4420E+02	1.0417E+01				-5.1637E+03	4.2897E+03	1.9865E+03
-1.4642E+02	2.1707E+02	3.5000E+00				-5.1637E+03	3.9833E+03	1.7556E+03
-1.4642E+02	1.6280E+02	7.0000E+00				-5.1637E+03	3.6769E+03	7.1626E+03
-1.4642E+02	1.3567E+02	2.5159E+01				-5.1637E+03	3.3705E+03	1.6811E+03
-1.4642E+02	1.0853E+02	2.7834E+01				-5.1637E+03	3.0641E+03	6.2739E+03
-1.4642E+02	8.1399E+01	2.5325E+01				-5.1637E+03	2.7577E+03	3.4792E+03
-1.4642E+02	5.4266E+01	2.6208E+02				-5.1637E+03	2.4512E+03	8.0620E+03
-1.4642E+02	2.7133E+01	9.3115E+02				-5.1637E+03	2.1448E+03	4.3710E+03
-1.4642E+02	0.0000E+00	1.5209E+04				-5.1637E+03	1.8384E+03	5.6595E+03
-1.7497E+02	6.7833E+02	1.7500E+00				-5.1637E+03	1.5320E+03	5.8668E+03
-1.7497E+02	6.5120E+02	1.7500E+00				-5.1637E+03	1.2256E+03	7.3858E+03

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-1.7497E+02	6.2406E+02	1.7500E+00				-5.1637E+03	9.1922E+02	2.5739E+04
-1.7497E+02	5.9693E+02	5.2500E+00				-5.1637E+03	6.1281E+02	2.3452E+04
-1.7497E+02	5.6980E+02	7.0000E+00				-5.1637E+03	3.0641E+02	6.8429E+04
-1.7497E+02	5.4266E+02	1.7500E+00				-5.1637E+03	0.0000E+00	2.6045E+05
-1.7497E+02	5.1553E+02	1.7500E+00				-5.5258E+03	8.8858E+03	2.5000E+00
-1.7497E+02	4.6126E+02	1.7500E+00				-5.5258E+03	6.1281E+03	3.4330E+01
-1.7497E+02	4.3413E+02	1.7500E+00				-5.5258E+03	5.8217E+03	8.2500E-01
-1.7497E+02	1.8993E+02	1.0417E+01				-5.5258E+03	5.5153E+03	4.1500E+00
-1.7497E+02	1.6280E+02	8.4158E+01				-5.5258E+03	5.2089E+03	1.3158E+02
-1.7497E+02	1.3567E+02	2.5000E+00				-5.5258E+03	4.9025E+03	2.5000E+00
-1.7497E+02	1.0853E+02	3.5000E+00				-5.5258E+03	4.5961E+03	3.8219E+02
-1.7497E+02	8.1399E+01	2.4500E+01				-5.5258E+03	4.2897E+03	1.6924E+02
-1.7497E+02	5.4266E+01	6.6242E+01				-5.5258E+03	3.9833E+03	2.3081E+03
-1.7497E+02	2.7133E+01	3.3658E+02				-5.5258E+03	3.6769E+03	1.3694E+03
-1.7497E+02	0.0000E+00	4.6713E+02				-5.5258E+03	3.3705E+03	7.5417E+02
-2.0352E+02	7.0546E+02	1.7500E+00				-5.5258E+03	3.0641E+03	3.9724E+02
-2.0352E+02	6.7833E+02	1.7500E+00				-5.5258E+03	2.7577E+03	3.3885E+03
-2.0352E+02	6.2406E+02	5.2500E+00				-5.5258E+03	2.4512E+03	1.4129E+03
-2.0352E+02	5.9693E+02	3.5000E+00				-5.5258E+03	2.1448E+03	2.6093E+03
-2.0352E+02	5.6980E+02	3.5000E+00				-5.5258E+03	1.8384E+03	3.3839E+02
-2.0352E+02	5.4266E+02	5.2500E+00				-5.5258E+03	1.5320E+03	6.7968E+02
-2.0352E+02	4.8840E+02	1.7500E+00				-5.5258E+03	1.2256E+03	1.7607E+03
-2.0352E+02	1.6280E+02	3.5000E+00				-5.5258E+03	9.1922E+02	2.3167E+03
-2.0352E+02	1.3567E+02	3.5000E+00				-5.5258E+03	6.1281E+02	1.1795E+04
-2.0352E+02	1.0853E+02	1.0500E+01				-5.5258E+03	3.0641E+02	4.3343E+04
-2.0352E+02	8.1399E+01	2.1000E+01				-5.5258E+03	0.0000E+00	1.1991E+05
-2.0352E+02	5.4266E+01	1.1475E+02				-5.8879E+03	7.9666E+03	8.2500E-01
-2.0352E+02	2.7133E+01	1.2382E+02				-5.8879E+03	6.7409E+03	2.5000E+00
-2.0352E+02	0.0000E+00	3.1033E+02				-5.8879E+03	6.1281E+03	1.3158E+02
-2.3207E+02	7.0546E+02	1.7500E+00				-5.8879E+03	3.9833E+03	3.4330E+01
-2.3207E+02	6.7833E+02	1.7500E+00				-5.8879E+03	3.6769E+03	2.9125E+00
-2.3207E+02	6.2406E+02	1.7500E+00				-5.8879E+03	3.3705E+03	1.6674E+02
-2.3207E+02	5.9693E+02	1.7500E+00				-5.8879E+03	3.0641E+03	1.6841E+02
-2.3207E+02	1.0853E+02	2.5000E+00				-5.8879E+03	2.4512E+03	1.3658E+02
-2.3207E+02	8.1399E+01	2.4417E+01				-5.8879E+03	2.1448E+03	2.2741E+03
-2.3207E+02	5.4266E+01	3.1500E+01				-5.8879E+03	1.8384E+03	6.5784E+02
-2.3207E+02	2.7133E+01	7.0000E+01				-5.8879E+03	1.5320E+03	5.9749E+02

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-2.3207E+02	0.0000E+00	9.5917E+01				-5.8879E+03	1.2256E+03	2.6399E+02
-2.6063E+02	2.1707E+02	3.5000E+00				-5.8879E+03	9.1922E+02	3.2344E+03
-2.6063E+02	1.3567E+02	1.3917E+01				-5.8879E+03	6.1281E+02	8.5282E+03
-2.6063E+02	1.0853E+02	7.0000E+00				-5.8879E+03	3.0641E+02	2.2442E+04
-2.6063E+02	8.1399E+01	3.5000E+00				-5.8879E+03	0.0000E+00	4.0686E+04
-2.6063E+02	5.4266E+01	9.0333E+01				-6.2499E+03	3.9833E+03	1.3158E+02
-2.6063E+02	2.7133E+01	3.7500E+01				-6.2499E+03	3.0641E+03	4.1652E+02
-2.6063E+02	0.0000E+00	4.2000E+01				-6.2499E+03	2.7577E+03	9.8386E+02
-2.8918E+02	1.8993E+02	3.5000E+00				-6.2499E+03	2.4512E+03	3.6830E+01
-2.8918E+02	1.3567E+02	3.5000E+00				-6.2499E+03	2.1448E+03	1.6591E+02
-2.8918E+02	1.0853E+02	1.0500E+01				-6.2499E+03	1.8384E+03	1.0182E+03
-2.8918E+02	8.1399E+01	1.7500E+01				-6.2499E+03	1.5320E+03	3.5993E+01
-2.8918E+02	5.4266E+01	3.1417E+01				-6.2499E+03	1.2256E+03	1.6591E+02
-2.8918E+02	2.7133E+01	3.5000E+01				-6.2499E+03	9.1922E+02	3.9724E+02
-2.8918E+02	0.0000E+00	7.6917E+01				-6.2499E+03	6.1281E+02	4.1736E+03
-3.1773E+02	2.4420E+02	3.5000E+00				-6.2499E+03	3.0641E+02	1.3720E+04
-3.1773E+02	1.0853E+02	1.4000E+01				-6.2499E+03	0.0000E+00	2.8167E+04
-3.1773E+02	8.1399E+01	7.0000E+00				-6.6120E+03	4.5961E+03	8.2500E-01
-3.1773E+02	5.4266E+01	3.8500E+01				-6.6120E+03	4.2897E+03	1.2500E+00
-3.1773E+02	2.7133E+01	6.3000E+01				-6.6120E+03	3.9833E+03	5.0000E+00
-3.1773E+02	0.0000E+00	9.4417E+01				-6.6120E+03	2.7577E+03	5.1377E+02
-3.4628E+02	1.6280E+02	3.5000E+00				-6.6120E+03	1.2256E+03	3.5980E+01
-3.4628E+02	1.3567E+02	3.5000E+00				-6.6120E+03	9.1922E+02	1.3240E+02
-3.4628E+02	8.1399E+01	1.7500E+01				-6.6120E+03	6.1281E+02	7.1160E+01
-3.4628E+02	5.4266E+01	3.1500E+01				-6.6120E+03	3.0641E+02	2.8536E+03
-3.4628E+02	2.7133E+01	2.4500E+01				-6.6120E+03	0.0000E+00	1.1910E+04
-3.4628E+02	0.0000E+00	8.7500E+01				-6.9741E+03	5.5153E+03	6.5790E+01
-3.7483E+02	1.3567E+02	3.5000E+00				-6.9741E+03	3.9833E+03	2.5000E+00
-3.7483E+02	1.0853E+02	3.5000E+00				-6.9741E+03	3.0641E+03	5.0000E+00
-3.7483E+02	8.1399E+01	7.0000E+00				-6.9741E+03	2.4512E+03	8.2500E-01
-3.7483E+02	5.4266E+01	2.1000E+01				-6.9741E+03	1.8384E+03	1.2500E+00
-3.7483E+02	2.7133E+01	3.5000E+01				-6.9741E+03	1.2256E+03	1.3158E+02
-3.7483E+02	0.0000E+00	8.3917E+01				-6.9741E+03	6.1281E+02	3.8219E+02
-4.0338E+02	1.3567E+02	7.0000E+00				-6.9741E+03	3.0641E+02	3.3321E+03
-4.0338E+02	1.0853E+02	3.5000E+00				-6.9741E+03	0.0000E+00	2.0659E+03
-4.0338E+02	8.1399E+01	1.7500E+01				-7.3362E+03	7.6602E+03	3.3250E+00
-4.0338E+02	5.4266E+01	1.4000E+01				-7.3362E+03	6.1281E+02	9.8386E+02

Markov Matrices								
Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-4.0338E+02	2.7133E+01	5.6000E+01				-7.3362E+03	3.0641E+02	3.8469E+02
-4.0338E+02	0.0000E+00	5.9500E+01				-7.3362E+03	0.0000E+00	3.3356E+03
-4.3194E+02	8.1399E+01	7.0000E+00				-7.6983E+03	3.0641E+03	8.2500E-01
-4.3194E+02	5.4266E+01	1.0500E+01				-7.6983E+03	1.5320E+03	1.2500E+00
-4.3194E+02	2.7133E+01	3.5000E+00				-7.6983E+03	3.0641E+02	2.5000E+00
-4.3194E+02	0.0000E+00	1.4000E+01				-7.6983E+03	0.0000E+00	1.3408E+02
-4.6049E+02	2.7133E+01	3.5000E+00				-8.0604E+03	0.0000E+00	8.2500E-01
-4.6049E+02	0.0000E+00	2.1000E+01				-8.4224E+03	0.0000E+00	3.3250E+00
-4.8904E+02	8.1399E+01	3.5000E+00				-8.7845E+03	0.0000E+00	2.2394E+03
-5.4614E+02	0.0000E+00	3.5000E+00						

Table 5-4 [1] Markov Matrix

Appendix D. [2] Markov matrices

This appendix contains the Markov Matrices for the shear force, the bending moment and the torsional moment in the bottom of the tower [2] . Foundation design must be verified for the most critical Markov matrices.

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
8.1140E+02	0.0000E+00	6.7642E+03	5.4305E+04	0.0000E+00	3.5000E+00	4.9057E+03	6.1522E+02	1.9481E+02
7.8319E+02	5.5705E+01	3.4609E+03	5.1511E+04	0.0000E+00	3.5000E+00	4.9057E+03	3.0761E+02	1.6026E+04
7.8319E+02	0.0000E+00	1.1322E+04	4.8717E+04	0.0000E+00	2.4500E+01	4.9057E+03	0.0000E+00	2.1695E+03
7.5498E+02	5.5705E+01	3.3334E-01	4.5923E+04	5.2810E+03	3.5000E+00	4.5072E+03	0.0000E+00	6.4151E+02
7.5498E+02	0.0000E+00	3.5101E+04	4.5923E+04	2.6405E+03	7.0000E+00	4.1088E+03	3.0761E+02	5.6574E+01
7.2678E+02	2.2282E+02	1.5280E+03	4.5923E+04	0.0000E+00	3.5000E+01	4.1088E+03	0.0000E+00	4.2379E+04
7.2678E+02	1.6712E+02	6.7642E+03	4.3129E+04	2.6405E+03	1.4000E+01	3.7103E+03	2.1533E+03	1.6026E+04
7.2678E+02	1.1141E+02	4.0000E+00	4.3129E+04	0.0000E+00	2.4500E+01	3.7103E+03	1.5381E+03	5.6574E+01
7.2678E+02	8.3558E+01	3.0936E+04	4.0335E+04	2.6405E+03	1.0500E+01	3.7103E+03	9.2284E+02	3.4644E+03
7.2678E+02	5.5705E+01	1.1336E+04	4.0335E+04	0.0000E+00	5.2500E+01	3.7103E+03	6.1522E+02	1.6026E+04
7.2678E+02	2.7853E+01	6.6020E+04	3.7541E+04	2.6405E+03	1.0500E+01	3.7103E+03	3.0761E+02	9.0948E+03
7.2678E+02	0.0000E+00	2.8920E+05	3.7541E+04	0.0000E+00	3.5000E+01	3.7103E+03	0.0000E+00	1.5473E+05
6.9857E+02	2.2282E+02	6.7644E+03	3.4747E+04	2.6405E+03	3.5000E+00	3.3118E+03	3.3837E+03	1.6281E+04
6.9857E+02	1.9497E+02	2.1821E+04	3.4747E+04	0.0000E+00	1.0500E+01	3.3118E+03	3.0761E+03	6.0074E+01
6.9857E+02	1.6712E+02	2.4854E+04	3.1952E+04	5.2810E+03	1.0417E+01	3.3118E+03	2.7685E+03	5.6574E+01
6.9857E+02	1.3926E+02	6.4926E+04	3.1952E+04	2.6405E+03	3.5000E+00	3.3118E+03	2.4609E+03	1.5305E+03
6.9857E+02	1.1141E+02	6.2296E+04	3.1952E+04	0.0000E+00	5.9417E+01	3.3118E+03	2.1533E+03	3.5000E+00
6.9857E+02	8.3558E+01	1.0869E+05	2.9158E+04	5.2810E+03	2.5000E+00	3.3118E+03	1.5381E+03	1.6026E+04
6.9857E+02	5.5705E+01	1.3577E+05	2.9158E+04	0.0000E+00	3.4834E+01	3.3118E+03	1.2304E+03	1.9086E+04
6.9857E+02	2.7853E+01	3.2157E+05	2.6364E+04	0.0000E+00	4.5251E+01	3.3118E+03	9.2284E+02	3.2062E+04
6.9857E+02	0.0000E+00	1.1326E+06	2.3570E+04	5.8091E+04	3.5000E+00	3.3118E+03	6.1522E+02	5.6387E+04
6.7036E+02	2.5067E+02	1.6667E-01	2.3570E+04	5.5451E+04	3.5000E+00	3.3118E+03	3.0761E+02	2.2233E+05
6.7036E+02	2.2282E+02	3.4116E+04	2.3570E+04	5.2810E+04	1.7500E+00	3.3118E+03	0.0000E+00	6.7726E+05
6.7036E+02	1.9497E+02	1.0397E+05	2.3570E+04	5.2810E+03	1.0417E+01	2.9133E+03	3.6913E+03	2.1129E+03
6.7036E+02	1.6712E+02	1.2832E+05	2.3570E+04	0.0000E+00	1.4383E+02	2.9133E+03	3.3837E+03	3.2056E+04
6.7036E+02	1.3926E+02	1.6344E+05	2.0776E+04	7.3934E+04	1.7500E+00	2.9133E+03	3.0761E+03	1.6026E+04
6.7036E+02	1.1141E+02	3.3601E+05	2.0776E+04	6.6013E+04	1.7500E+00	2.9133E+03	2.7685E+03	5.6574E+01
6.7036E+02	8.3558E+01	4.9352E+05	2.0776E+04	6.3372E+04	5.2500E+00	2.9133E+03	2.4609E+03	1.4438E+04
6.7036E+02	5.5705E+01	7.1448E+05	2.0776E+04	6.0732E+04	5.2500E+00	2.9133E+03	2.1533E+03	3.8569E+04
6.7036E+02	2.7853E+01	1.2418E+06	2.0776E+04	5.8091E+04	5.2500E+00	2.9133E+03	1.8457E+03	5.5060E+04
6.7036E+02	0.0000E+00	4.8876E+06	2.0776E+04	5.5451E+04	8.7500E+00	2.9133E+03	1.5381E+03	5.8363E+04
6.4215E+02	3.0638E+02	5.6612E+03	2.0776E+04	5.2810E+04	3.5000E+00	2.9133E+03	1.2304E+03	7.0043E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
6.4215E+02	2.7853E+02	1.8173E+04	2.0776E+04	5.0170E+04	5.2500E+00	2.9133E+03	9.2284E+02	4.0793E+04
6.4215E+02	2.5067E+02	5.7758E+04	2.0776E+04	4.7529E+04	1.7500E+00	2.9133E+03	6.1522E+02	1.2640E+05
6.4215E+02	2.2282E+02	1.6889E+05	2.0776E+04	4.4889E+04	5.2500E+00	2.9133E+03	3.0761E+02	5.4337E+05
6.4215E+02	1.9497E+02	2.7233E+05	2.0776E+04	2.6405E+03	4.0751E+01	2.9133E+03	0.0000E+00	1.7534E+06
6.4215E+02	1.6712E+02	7.7680E+05	2.0776E+04	0.0000E+00	4.4532E+02	2.5149E+03	6.4598E+03	4.2500E+00
6.4215E+02	1.3926E+02	1.1007E+06	1.7982E+04	6.0732E+04	1.7500E+00	2.5149E+03	4.6142E+03	7.7975E+02
6.4215E+02	1.1141E+02	1.9879E+06	1.7982E+04	5.8091E+04	1.2250E+01	2.5149E+03	4.3066E+03	1.9481E+02
6.4215E+02	8.3558E+01	2.5389E+06	1.7982E+04	5.5451E+04	8.7500E+00	2.5149E+03	3.6913E+03	3.6557E+03
6.4215E+02	5.5705E+01	3.1739E+06	1.7982E+04	5.2810E+04	3.5000E+00	2.5149E+03	3.3837E+03	1.7228E+03
6.4215E+02	2.7853E+01	5.0221E+06	1.7982E+04	4.4889E+04	5.2500E+00	2.5149E+03	3.0761E+03	6.7592E+04
6.4215E+02	0.0000E+00	1.2892E+07	1.7982E+04	4.2248E+04	1.7500E+00	2.5149E+03	2.7685E+03	7.2591E+04
6.1394E+02	3.8994E+02	1.1322E+04	1.7982E+04	1.3203E+04	7.0000E+00	2.5149E+03	2.4609E+03	1.5981E+05
6.1394E+02	3.6208E+02	1.2516E+04	1.7982E+04	5.2810E+03	1.0417E+01	2.5149E+03	2.1533E+03	1.1220E+05
6.1394E+02	3.3423E+02	1.8288E+04	1.7982E+04	2.6405E+03	1.2167E+02	2.5149E+03	1.8457E+03	2.4048E+05
6.1394E+02	3.0638E+02	5.2070E+04	1.7982E+04	0.0000E+00	1.5741E+03	2.5149E+03	1.5381E+03	1.7441E+05
6.1394E+02	2.7853E+02	2.1239E+05	1.5188E+04	6.0732E+04	1.7500E+00	2.5149E+03	1.2304E+03	1.7125E+05
6.1394E+02	2.5067E+02	5.1939E+05	1.5188E+04	5.8091E+04	3.5000E+00	2.5149E+03	9.2284E+02	3.5347E+05
6.1394E+02	2.2282E+02	1.1260E+06	1.5188E+04	5.2810E+04	1.7500E+00	2.5149E+03	6.1522E+02	6.6070E+05
6.1394E+02	1.9497E+02	1.9829E+06	1.5188E+04	4.2248E+04	1.7500E+00	2.5149E+03	3.0761E+02	1.4566E+06
6.1394E+02	1.6712E+02	3.1813E+06	1.5188E+04	3.9608E+04	3.5000E+00	2.5149E+03	0.0000E+00	3.2438E+06
6.1394E+02	1.3926E+02	4.4297E+06	1.5188E+04	3.6967E+04	1.7500E+00	2.1164E+03	5.8446E+03	3.3250E+00
6.1394E+02	1.1141E+02	6.3867E+06	1.5188E+04	2.3765E+04	3.5000E+00	2.1164E+03	5.5370E+03	3.4609E+03
6.1394E+02	8.3558E+01	8.2712E+06	1.5188E+04	1.8484E+04	1.0500E+01	2.1164E+03	4.6142E+03	1.5280E+03
6.1394E+02	5.5705E+01	1.0036E+07	1.5188E+04	1.5843E+04	7.0000E+00	2.1164E+03	4.3066E+03	2.7579E+04
6.1394E+02	2.7853E+01	1.2633E+07	1.5188E+04	1.3203E+04	3.5000E+00	2.1164E+03	3.9990E+03	1.7895E+04
6.1394E+02	0.0000E+00	2.6458E+07	1.5188E+04	2.6405E+03	2.8624E+02	2.1164E+03	3.6913E+03	6.0422E+04
5.8573E+02	4.7349E+02	1.1327E+04	1.5188E+04	0.0000E+00	1.7741E+04	2.1164E+03	3.3837E+03	1.0366E+05
5.8573E+02	4.4564E+02	1.1328E+04	1.2394E+04	5.8091E+04	1.7500E+00	2.1164E+03	3.0761E+03	2.7982E+05
5.8573E+02	4.1779E+02	1.8089E+04	1.2394E+04	5.0170E+04	1.7500E+00	2.1164E+03	2.7685E+03	2.5953E+05
5.8573E+02	3.8994E+02	6.2250E+04	1.2394E+04	4.4889E+04	1.7500E+00	2.1164E+03	2.4609E+03	2.5669E+05
5.8573E+02	3.6208E+02	1.2599E+05	1.2394E+04	2.9046E+04	3.5000E+00	2.1164E+03	2.1533E+03	4.4189E+05
5.8573E+02	3.3423E+02	3.1657E+05	1.2394E+04	2.6405E+04	2.8917E+01	2.1164E+03	1.8457E+03	3.3146E+05
5.8573E+02	3.0638E+02	4.6021E+05	1.2394E+04	2.3765E+04	7.8500E+01	2.1164E+03	1.5381E+03	6.7930E+05
5.8573E+02	2.7853E+02	8.8971E+05	1.2394E+04	2.1124E+04	2.1000E+01	2.1164E+03	1.2304E+03	4.9569E+05
5.8573E+02	2.5067E+02	1.8084E+06	1.2394E+04	1.8484E+04	3.5000E+00	2.1164E+03	9.2284E+02	6.9620E+05
5.8573E+02	2.2282E+02	2.9838E+06	1.2394E+04	1.5843E+04	7.0000E+00	2.1164E+03	6.1522E+02	1.1184E+06
5.8573E+02	1.9497E+02	4.6430E+06	1.2394E+04	1.0562E+04	3.5000E+00	2.1164E+03	3.0761E+02	2.6176E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
5.8573E+02	1.6712E+02	7.1861E+06	1.2394E+04	7.9215E+03	2.2800E+02	2.1164E+03	0.0000E+00	5.6994E+06
5.8573E+02	1.3926E+02	1.0028E+07	1.2394E+04	5.2810E+03	3.5000E+00	1.7179E+03	1.0459E+04	1.2500E+00
5.8573E+02	1.1141E+02	1.2034E+07	1.2394E+04	2.6405E+03	5.5300E+02	1.7179E+03	9.2284E+03	7.6400E+02
5.8573E+02	8.3558E+01	1.5594E+07	1.2394E+04	0.0000E+00	8.5124E+04	1.7179E+03	7.6903E+03	1.7500E+00
5.8573E+02	5.5705E+01	1.6227E+07	9.5995E+03	4.2248E+04	1.7500E+00	1.7179E+03	7.0751E+03	8.0130E+03
5.8573E+02	2.7853E+01	1.9890E+07	9.5995E+03	3.6967E+04	1.7500E+00	1.7179E+03	6.7675E+03	1.7500E+00
5.8573E+02	0.0000E+00	3.9262E+07	9.5995E+03	3.1686E+04	1.7500E+00	1.7179E+03	5.5370E+03	1.1069E+04
5.5752E+02	5.5705E+02	6.7643E+03	9.5995E+03	2.9046E+04	1.4000E+01	1.7179E+03	5.2294E+03	6.4501E+02
5.5752E+02	5.2920E+02	3.3839E+03	9.5995E+03	2.6405E+04	4.6250E+01	1.7179E+03	4.9218E+03	6.5239E+03
5.5752E+02	5.0135E+02	1.1322E+04	9.5995E+03	2.3765E+04	1.1158E+02	1.7179E+03	4.6142E+03	3.3405E+04
5.5752E+02	4.7349E+02	2.0368E+04	9.5995E+03	2.1124E+04	7.0000E+00	1.7179E+03	4.3066E+03	1.1978E+05
5.5752E+02	4.4564E+02	6.5675E+04	9.5995E+03	1.8484E+04	2.3583E+02	1.7179E+03	3.9990E+03	1.6526E+05
5.5752E+02	4.1779E+02	1.2455E+05	9.5995E+03	1.5843E+04	3.8358E+02	1.7179E+03	3.6913E+03	2.4485E+05
5.5752E+02	3.8994E+02	1.6097E+05	9.5995E+03	1.3203E+04	1.6875E+02	1.7179E+03	3.3837E+03	3.3925E+05
5.5752E+02	3.6208E+02	3.0359E+05	9.5995E+03	1.0562E+04	1.1253E+04	1.7179E+03	3.0761E+03	3.9413E+05
5.5752E+02	3.3423E+02	4.8341E+05	9.5995E+03	7.9215E+03	1.3655E+04	1.7179E+03	2.7685E+03	4.6735E+05
5.5752E+02	3.0638E+02	7.5029E+05	9.5995E+03	5.2810E+03	1.1498E+04	1.7179E+03	2.4609E+03	6.7646E+05
5.5752E+02	2.7853E+02	1.0719E+06	9.5995E+03	2.6405E+03	1.9172E+04	1.7179E+03	2.1533E+03	9.7515E+05
5.5752E+02	2.5067E+02	1.7095E+06	9.5995E+03	0.0000E+00	2.3203E+05	1.7179E+03	1.8457E+03	1.0491E+06
5.5752E+02	2.2282E+02	2.8137E+06	6.8054E+03	5.0170E+04	1.2500E+00	1.7179E+03	1.5381E+03	9.9088E+05
5.5752E+02	1.9497E+02	4.4747E+06	6.8054E+03	3.6967E+04	3.0667E+01	1.7179E+03	1.2304E+03	1.1495E+06
5.5752E+02	1.6712E+02	6.6817E+06	6.8054E+03	3.1686E+04	5.2500E+00	1.7179E+03	9.2284E+02	1.0447E+06
5.5752E+02	1.3926E+02	9.4362E+06	6.8054E+03	2.9046E+04	5.2500E+00	1.7179E+03	6.1522E+02	1.5944E+06
5.5752E+02	1.1141E+02	1.2281E+07	6.8054E+03	2.6405E+04	1.9250E+01	1.7179E+03	3.0761E+02	4.3306E+06
5.5752E+02	8.3558E+01	1.5378E+07	6.8054E+03	2.3765E+04	1.1308E+02	1.7179E+03	0.0000E+00	1.0402E+07
5.5752E+02	5.5705E+01	1.6421E+07	6.8054E+03	2.1124E+04	3.7667E+01	1.3194E+03	7.9979E+03	2.9247E+02
5.5752E+02	2.7853E+01	2.0178E+07	6.8054E+03	1.8484E+04	8.8716E+03	1.3194E+03	7.3827E+03	1.7601E+03
5.5752E+02	0.0000E+00	4.1753E+07	6.8054E+03	1.5843E+04	5.7379E+03	1.3194E+03	6.4598E+03	9.7447E+03
5.2931E+02	6.4061E+02	3.3821E+03	6.8054E+03	1.3203E+04	2.5370E+04	1.3194E+03	6.1522E+03	5.4368E+03
5.2931E+02	6.1276E+02	3.3821E+03	6.8054E+03	1.0562E+04	9.2262E+03	1.3194E+03	5.8446E+03	2.9011E+04
5.2931E+02	5.8490E+02	3.3822E+03	6.8054E+03	7.9215E+03	4.2827E+04	1.3194E+03	5.5370E+03	4.2940E+04
5.2931E+02	5.5705E+02	1.6911E+04	6.8054E+03	5.2810E+03	2.6509E+04	1.3194E+03	5.2294E+03	2.4129E+04
5.2931E+02	5.2920E+02	2.0920E+04	6.8054E+03	2.6405E+03	4.9740E+04	1.3194E+03	4.9218E+03	5.0659E+04
5.2931E+02	5.0135E+02	4.7641E+04	6.8054E+03	0.0000E+00	7.6972E+05	1.3194E+03	4.6142E+03	1.2578E+05
5.2931E+02	4.7349E+02	7.9276E+04	4.0113E+03	4.2248E+04	1.7500E+00	1.3194E+03	4.3066E+03	2.4415E+05
5.2931E+02	4.4564E+02	1.0323E+05	4.0113E+03	3.6967E+04	4.4667E+01	1.3194E+03	3.9990E+03	3.9641E+05
5.2931E+02	4.1779E+02	7.3906E+04	4.0113E+03	3.4327E+04	4.6917E+01	1.3194E+03	3.6913E+03	4.3172E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
5.2931E+02	3.8994E+02	9.7894E+04	4.0113E+03	3.1686E+04	1.1792E+02	1.3194E+03	3.3837E+03	5.8869E+05
5.2931E+02	3.6208E+02	1.1837E+05	4.0113E+03	2.9046E+04	6.3029E+03	1.3194E+03	3.0761E+03	7.4576E+05
5.2931E+02	3.3423E+02	1.2130E+05	4.0113E+03	2.6405E+04	8.4162E+03	1.3194E+03	2.7685E+03	1.0723E+06
5.2931E+02	3.0638E+02	2.3569E+05	4.0113E+03	2.3765E+04	3.3250E+01	1.3194E+03	2.4609E+03	1.0958E+06
5.2931E+02	2.7853E+02	4.8516E+05	4.0113E+03	2.1124E+04	6.4529E+03	1.3194E+03	2.1533E+03	1.5651E+06
5.2931E+02	2.5067E+02	9.8398E+05	4.0113E+03	1.8484E+04	2.2051E+04	1.3194E+03	1.8457E+03	1.8300E+06
5.2931E+02	2.2282E+02	1.5698E+06	4.0113E+03	1.5843E+04	2.3817E+04	1.3194E+03	1.5381E+03	2.1065E+06
5.2931E+02	1.9497E+02	2.7557E+06	4.0113E+03	1.3203E+04	6.6973E+04	1.3194E+03	1.2304E+03	1.9876E+06
5.2931E+02	1.6712E+02	4.7325E+06	4.0113E+03	1.0562E+04	1.3866E+05	1.3194E+03	9.2284E+02	2.0609E+06
5.2931E+02	1.3926E+02	6.5231E+06	4.0113E+03	7.9215E+03	5.4061E+05	1.3194E+03	6.1522E+02	2.6784E+06
5.2931E+02	1.1141E+02	8.7551E+06	4.0113E+03	5.2810E+03	1.3238E+06	1.3194E+03	3.0761E+02	6.7830E+06
5.2931E+02	8.3558E+01	1.1020E+07	4.0113E+03	2.6405E+03	2.3023E+06	1.3194E+03	0.0000E+00	1.6048E+07
5.2931E+02	5.5705E+01	1.3144E+07	4.0113E+03	0.0000E+00	8.3956E+06	9.2095E+02	1.4765E+04	1.6625E+00
5.2931E+02	2.7853E+01	1.6139E+07	1.2172E+03	4.4889E+04	2.1625E+00	9.2095E+02	1.4458E+04	1.6625E+00
5.2931E+02	0.0000E+00	3.4673E+07	1.2172E+03	4.2248E+04	7.9167E+01	9.2095E+02	1.1382E+04	1.2500E+00
5.0110E+02	6.9631E+02	7.6400E+02	1.2172E+03	3.9608E+04	5.1404E+01	9.2095E+02	9.8436E+03	2.8287E+01
5.0110E+02	6.6846E+02	4.2249E+03	1.2172E+03	3.6967E+04	2.1000E+03	9.2095E+02	9.2284E+03	1.0417E+00
5.0110E+02	6.4061E+02	3.3821E+03	1.2172E+03	3.4327E+04	2.2760E+03	9.2095E+02	8.3055E+03	8.2078E+03
5.0110E+02	6.1276E+02	6.7642E+03	1.2172E+03	3.1686E+04	3.4472E+03	9.2095E+02	7.9979E+03	1.9656E+02
5.0110E+02	5.8490E+02	2.7697E+04	1.2172E+03	2.9046E+04	3.4005E+04	9.2095E+02	7.3827E+03	5.6574E+01
5.0110E+02	5.5705E+02	2.7763E+04	1.2172E+03	2.6405E+04	3.2231E+04	9.2095E+02	7.0751E+03	5.8494E+02
5.0110E+02	5.2920E+02	3.7349E+04	1.2172E+03	2.3765E+04	7.1053E+04	9.2095E+02	6.7675E+03	2.8769E+03
5.0110E+02	5.0135E+02	6.3118E+04	1.2172E+03	2.1124E+04	4.7675E+04	9.2095E+02	6.4598E+03	1.0126E+04
5.0110E+02	4.7349E+02	5.3387E+04	1.2172E+03	1.8484E+04	1.1494E+05	9.2095E+02	6.1522E+03	3.8799E+04
5.0110E+02	4.4564E+02	7.0943E+04	1.2172E+03	1.5843E+04	1.6639E+05	9.2095E+02	5.8446E+03	7.1437E+04
5.0110E+02	4.1779E+02	8.3614E+04	1.2172E+03	1.3203E+04	2.8504E+05	9.2095E+02	5.5370E+03	4.9645E+04
5.0110E+02	3.8994E+02	7.7869E+04	1.2172E+03	1.0562E+04	4.6381E+05	9.2095E+02	5.2294E+03	9.6258E+04
5.0110E+02	3.6208E+02	1.1737E+05	1.2172E+03	7.9215E+03	7.8400E+05	9.2095E+02	4.9218E+03	1.6935E+05
5.0110E+02	3.3423E+02	9.0035E+04	1.2172E+03	5.2810E+03	1.8471E+06	9.2095E+02	4.6142E+03	3.1365E+05
5.0110E+02	3.0638E+02	2.0062E+05	1.2172E+03	2.6405E+03	2.0216E+06	9.2095E+02	4.3066E+03	3.7941E+05
5.0110E+02	2.7853E+02	3.4749E+05	1.2172E+03	0.0000E+00	1.5247E+07	9.2095E+02	3.9990E+03	4.4422E+05
5.0110E+02	2.5067E+02	6.9608E+05	-1.5769E+03	5.0170E+04	3.7500E+01	9.2095E+02	3.6913E+03	7.0011E+05
5.0110E+02	2.2282E+02	9.9876E+05	-1.5769E+03	4.7529E+04	3.8750E+01	9.2095E+02	3.3837E+03	7.0853E+05
5.0110E+02	1.9497E+02	1.9908E+06	-1.5769E+03	4.4889E+04	5.8321E+01	9.2095E+02	3.0761E+03	1.1527E+06
5.0110E+02	1.6712E+02	3.8185E+06	-1.5769E+03	4.2248E+04	2.2282E+03	9.2095E+02	2.7685E+03	1.4650E+06
5.0110E+02	1.3926E+02	5.2499E+06	-1.5769E+03	3.9608E+04	2.8964E+02	9.2095E+02	2.4609E+03	1.6202E+06
5.0110E+02	1.1141E+02	6.0759E+06	-1.5769E+03	3.6967E+04	7.8224E+03	9.2095E+02	2.1533E+03	2.3760E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
5.0110E+02	8.3558E+01	8.5459E+06	-1.5769E+03	3.4327E+04	4.4825E+03	9.2095E+02	1.8457E+03	2.7173E+06
5.0110E+02	5.5705E+01	1.0527E+07	-1.5769E+03	3.1686E+04	2.5365E+03	9.2095E+02	1.5381E+03	2.9452E+06
5.0110E+02	2.7853E+01	1.3497E+07	-1.5769E+03	2.9046E+04	6.6498E+02	9.2095E+02	1.2304E+03	3.1020E+06
5.0110E+02	0.0000E+00	2.8372E+07	-1.5769E+03	2.6405E+04	5.4567E+03	9.2095E+02	9.2284E+02	2.8920E+06
4.7290E+02	7.2417E+02	2.4944E+03	-1.5769E+03	2.3765E+04	1.0947E+04	9.2095E+02	6.1522E+02	4.1989E+06
4.7290E+02	6.9631E+02	1.7304E+03	-1.5769E+03	2.1124E+04	2.3662E+04	9.2095E+02	3.0761E+02	1.0182E+07
4.7290E+02	6.6846E+02	1.1877E+04	-1.5769E+03	1.8484E+04	6.5192E+04	9.2095E+02	0.0000E+00	2.4050E+07
4.7290E+02	6.4061E+02	3.4609E+03	-1.5769E+03	1.5843E+04	9.5685E+04	5.2247E+02	1.2304E+04	1.2500E+00
4.7290E+02	6.1276E+02	1.8720E+04	-1.5769E+03	1.3203E+04	1.3922E+05	5.2247E+02	1.1997E+04	1.8667E+01
4.7290E+02	5.8490E+02	2.3832E+04	-1.5769E+03	1.0562E+04	2.4473E+05	5.2247E+02	1.1689E+04	1.2500E+00
4.7290E+02	5.5705E+02	1.6508E+04	-1.5769E+03	7.9215E+03	4.7497E+05	5.2247E+02	1.0766E+04	7.6400E+02
4.7290E+02	5.2920E+02	2.3990E+04	-1.5769E+03	5.2810E+03	3.9902E+05	5.2247E+02	9.2284E+03	1.2500E+00
4.7290E+02	5.0135E+02	2.3911E+04	-1.5769E+03	2.6405E+03	2.7632E+05	5.2247E+02	7.9979E+03	1.5323E+03
4.7290E+02	4.7349E+02	2.1577E+04	-1.5769E+03	0.0000E+00	4.1903E+06	5.2247E+02	7.6903E+03	5.6574E+01
4.7290E+02	4.4564E+02	2.9451E+04	-4.3710E+03	1.1090E+05	1.7500E+00	5.2247E+02	7.3827E+03	9.8109E+03
4.7290E+02	4.1779E+02	8.0005E+04	-4.3710E+03	5.5451E+04	3.7500E+01	5.2247E+02	7.0751E+03	3.8019E+04
4.7290E+02	3.8994E+02	5.7348E+04	-4.3710E+03	5.2810E+04	2.9329E+01	5.2247E+02	6.7675E+03	1.7078E+04
4.7290E+02	3.6208E+02	9.9957E+04	-4.3710E+03	5.0170E+04	3.5638E+01	5.2247E+02	6.4598E+03	3.1363E+04
4.7290E+02	3.3423E+02	1.6529E+05	-4.3710E+03	4.7529E+04	1.2500E+00	5.2247E+02	6.1522E+03	5.3035E+04
4.7290E+02	3.0638E+02	2.0682E+05	-4.3710E+03	4.4889E+04	1.5408E+02	5.2247E+02	5.8446E+03	4.4843E+04
4.7290E+02	2.7853E+02	4.8054E+05	-4.3710E+03	4.2248E+04	4.4147E+03	5.2247E+02	5.5370E+03	1.8081E+05
4.7290E+02	2.5067E+02	6.9372E+05	-4.3710E+03	3.9608E+04	2.9907E+03	5.2247E+02	5.2294E+03	2.0960E+05
4.7290E+02	2.2282E+02	1.3408E+06	-4.3710E+03	3.6967E+04	2.2251E+03	5.2247E+02	4.9218E+03	3.6171E+05
4.7290E+02	1.9497E+02	2.1136E+06	-4.3710E+03	3.4327E+04	6.5965E+02	5.2247E+02	4.6142E+03	2.8189E+05
4.7290E+02	1.6712E+02	3.1813E+06	-4.3710E+03	3.1686E+04	6.5863E+03	5.2247E+02	4.3066E+03	4.7516E+05
4.7290E+02	1.3926E+02	4.5483E+06	-4.3710E+03	2.9046E+04	4.8412E+03	5.2247E+02	3.9990E+03	5.6030E+05
4.7290E+02	1.1141E+02	5.8973E+06	-4.3710E+03	2.6405E+04	1.2540E+04	5.2247E+02	3.6913E+03	7.6418E+05
4.7290E+02	8.3558E+01	7.3555E+06	-4.3710E+03	2.3765E+04	1.2788E+04	5.2247E+02	3.3837E+03	1.0137E+06
4.7290E+02	5.5705E+01	8.8652E+06	-4.3710E+03	2.1124E+04	2.1284E+04	5.2247E+02	3.0761E+03	1.3911E+06
4.7290E+02	2.7853E+01	1.2028E+07	-4.3710E+03	1.8484E+04	3.0150E+04	5.2247E+02	2.7685E+03	1.5099E+06
4.7290E+02	0.0000E+00	2.4496E+07	-4.3710E+03	1.5843E+04	6.3012E+04	5.2247E+02	2.4609E+03	2.4275E+06
4.4469E+02	7.7987E+02	7.6400E+02	-4.3710E+03	1.3203E+04	1.4598E+05	5.2247E+02	2.1533E+03	2.6007E+06
4.4469E+02	7.2417E+02	3.4609E+03	-4.3710E+03	1.0562E+04	3.1944E+05	5.2247E+02	1.8457E+03	3.2300E+06
4.4469E+02	6.6846E+02	1.7304E+03	-4.3710E+03	7.9215E+03	6.0025E+05	5.2247E+02	1.5381E+03	4.2128E+06
4.4469E+02	6.4061E+02	1.0565E+03	-4.3710E+03	5.2810E+03	6.8889E+05	5.2247E+02	1.2304E+03	4.4674E+06
4.4469E+02	6.1276E+02	4.2249E+03	-4.3710E+03	2.6405E+03	3.6777E+05	5.2247E+02	9.2284E+02	4.3421E+06
4.4469E+02	5.8490E+02	9.0113E+03	-4.3710E+03	0.0000E+00	6.0182E+06	5.2247E+02	6.1522E+02	6.0641E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
4.4469E+02	5.5705E+02	2.9464E+04	-7.1651E+03	1.2938E+05	1.7500E+00	5.2247E+02	3.0761E+02	1.4123E+07
4.4469E+02	5.2920E+02	3.4609E+03	-7.1651E+03	1.1618E+05	1.7500E+00	5.2247E+02	0.0000E+00	3.1339E+07
4.4469E+02	5.0135E+02	1.5495E+04	-7.1651E+03	1.0562E+05	5.2500E+00	1.2400E+02	1.3843E+04	1.2500E+00
4.4469E+02	4.7349E+02	1.3484E+04	-7.1651E+03	5.5451E+04	5.6745E+01	1.2400E+02	1.3227E+04	1.8667E+01
4.4469E+02	4.4564E+02	4.3582E+04	-7.1651E+03	5.0170E+04	3.8662E+01	1.2400E+02	1.2920E+04	2.9247E+02
4.4469E+02	4.1779E+02	3.5119E+04	-7.1651E+03	4.7529E+04	2.8000E+01	1.2400E+02	1.2304E+04	1.0577E+03
4.4469E+02	3.8994E+02	9.3124E+04	-7.1651E+03	4.4889E+04	3.9821E+01	1.2400E+02	1.1689E+04	7.6525E+02
4.4469E+02	3.6208E+02	1.5702E+05	-7.1651E+03	4.2248E+04	3.9975E+01	1.2400E+02	1.1382E+04	1.7304E+03
4.4469E+02	3.3423E+02	2.3567E+05	-7.1651E+03	3.9608E+04	9.1813E+01	1.2400E+02	1.1074E+04	1.8205E+03
4.4469E+02	3.0638E+02	2.5511E+05	-7.1651E+03	3.6967E+04	7.9578E+03	1.2400E+02	1.0766E+04	7.6400E+02
4.4469E+02	2.7853E+02	5.2061E+05	-7.1651E+03	3.4327E+04	9.6851E+01	1.2400E+02	1.0459E+04	1.7304E+03
4.4469E+02	2.5067E+02	7.8642E+05	-7.1651E+03	3.1686E+04	1.9687E+03	1.2400E+02	1.0151E+04	9.7435E+03
4.4469E+02	2.2282E+02	1.1398E+06	-7.1651E+03	2.9046E+04	3.1750E+03	1.2400E+02	9.8436E+03	9.8409E+03
4.4469E+02	1.9497E+02	1.9851E+06	-7.1651E+03	2.6405E+04	6.6466E+03	1.2400E+02	9.5360E+03	1.7500E+00
4.4469E+02	1.6712E+02	2.7852E+06	-7.1651E+03	2.3765E+04	7.3662E+03	1.2400E+02	9.2284E+03	1.5280E+03
4.4469E+02	1.3926E+02	4.0262E+06	-7.1651E+03	2.1124E+04	1.1871E+04	1.2400E+02	8.9207E+03	3.6409E+03
4.4469E+02	1.1141E+02	5.2502E+06	-7.1651E+03	1.8484E+04	2.8219E+04	1.2400E+02	8.6131E+03	2.6878E+04
4.4469E+02	8.3558E+01	7.2040E+06	-7.1651E+03	1.5843E+04	1.7586E+05	1.2400E+02	8.3055E+03	7.0165E+03
4.4469E+02	5.5705E+01	8.9051E+06	-7.1651E+03	1.3203E+04	4.2315E+05	1.2400E+02	7.9979E+03	5.9897E+04
4.4469E+02	2.7853E+01	1.2801E+07	-7.1651E+03	1.0562E+04	4.5252E+05	1.2400E+02	7.6903E+03	2.3261E+04
4.4469E+02	0.0000E+00	2.3112E+07	-7.1651E+03	7.9215E+03	7.9726E+05	1.2400E+02	7.3827E+03	3.7568E+04
4.1648E+02	7.7987E+02	7.6400E+02	-7.1651E+03	5.2810E+03	8.6794E+05	1.2400E+02	7.0751E+03	9.1947E+04
4.1648E+02	7.5202E+02	2.9247E+02	-7.1651E+03	2.6405E+03	3.7951E+05	1.2400E+02	6.7675E+03	8.1235E+04
4.1648E+02	6.9631E+02	2.9247E+02	-7.1651E+03	0.0000E+00	8.6745E+06	1.2400E+02	6.4598E+03	6.6906E+04
4.1648E+02	6.6846E+02	1.0565E+03	-9.9593E+03	1.2938E+05	1.7500E+00	1.2400E+02	6.1522E+03	1.2397E+05
4.1648E+02	6.4061E+02	3.2584E+03	-9.9593E+03	1.2146E+05	8.7500E+00	1.2400E+02	5.8446E+03	2.0075E+05
4.1648E+02	6.1276E+02	5.3948E+03	-9.9593E+03	1.1882E+05	5.2500E+00	1.2400E+02	5.5370E+03	1.6588E+05
4.1648E+02	5.8490E+02	1.5297E+03	-9.9593E+03	1.1618E+05	3.5000E+00	1.2400E+02	5.2294E+03	2.9554E+05
4.1648E+02	5.5705E+02	7.9783E+03	-9.9593E+03	1.1354E+05	3.5000E+00	1.2400E+02	4.9218E+03	2.9842E+05
4.1648E+02	5.2920E+02	8.4161E+03	-9.9593E+03	1.1090E+05	1.7500E+00	1.2400E+02	4.6142E+03	4.4370E+05
4.1648E+02	5.0135E+02	1.4766E+04	-9.9593E+03	1.0826E+05	1.7500E+00	1.2400E+02	4.3066E+03	3.8260E+05
4.1648E+02	4.7349E+02	4.9692E+04	-9.9593E+03	9.2418E+04	1.7500E+00	1.2400E+02	3.9990E+03	7.1889E+05
4.1648E+02	4.4564E+02	5.5992E+04	-9.9593E+03	8.7137E+04	1.7500E+00	1.2400E+02	3.6913E+03	8.8034E+05
4.1648E+02	4.1779E+02	8.4858E+04	-9.9593E+03	8.4496E+04	1.2500E+00	1.2400E+02	3.3837E+03	1.2218E+06
4.1648E+02	3.8994E+02	9.9077E+04	-9.9593E+03	6.8653E+04	4.1250E-01	1.2400E+02	3.0761E+03	1.5814E+06
4.1648E+02	3.6208E+02	1.4580E+05	-9.9593E+03	5.8091E+04	4.1250E-01	1.2400E+02	2.7685E+03	1.5936E+06
4.1648E+02	3.3423E+02	1.8775E+05	-9.9593E+03	5.5451E+04	2.8579E+01	1.2400E+02	2.4609E+03	2.2757E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
4.1648E+02	3.0638E+02	3.3627E+05	-9.9593E+03	5.2810E+04	1.8042E+01	1.2400E+02	2.1533E+03	3.1967E+06
4.1648E+02	2.7853E+02	5.2996E+05	-9.9593E+03	5.0170E+04	1.9902E+01	1.2400E+02	1.8457E+03	4.3530E+06
4.1648E+02	2.5067E+02	7.7467E+05	-9.9593E+03	4.7529E+04	3.3528E+03	1.2400E+02	1.5381E+03	5.3290E+06
4.1648E+02	2.2282E+02	1.2738E+06	-9.9593E+03	4.4889E+04	3.4127E+03	1.2400E+02	1.2304E+03	5.7538E+06
4.1648E+02	1.9497E+02	1.9096E+06	-9.9593E+03	4.2248E+04	1.2443E+01	1.2400E+02	9.2284E+02	5.9961E+06
4.1648E+02	1.6712E+02	2.4849E+06	-9.9593E+03	3.9608E+04	2.6949E+01	1.2400E+02	6.1522E+02	8.2907E+06
4.1648E+02	1.3926E+02	4.0951E+06	-9.9593E+03	3.6967E+04	2.6538E+01	1.2400E+02	3.0761E+02	1.9404E+07
4.1648E+02	1.1141E+02	5.5239E+06	-9.9593E+03	3.4327E+04	2.0191E+02	1.2400E+02	0.0000E+00	4.9387E+07
4.1648E+02	8.3558E+01	6.6039E+06	-9.9593E+03	3.1686E+04	4.9731E+02	-2.7448E+02	1.3535E+04	3.8988E+02
4.1648E+02	5.5705E+01	9.1558E+06	-9.9593E+03	2.9046E+04	1.2095E+04	-2.7448E+02	1.2920E+04	1.2500E+00
4.1648E+02	2.7853E+01	1.3013E+07	-9.9593E+03	2.6405E+04	4.5212E+03	-2.7448E+02	1.2304E+04	8.6141E+02
4.1648E+02	0.0000E+00	2.3092E+07	-9.9593E+03	2.3765E+04	5.5038E+02	-2.7448E+02	1.1689E+04	4.0458E+03
3.8827E+02	8.0772E+02	2.9247E+02	-9.9593E+03	2.1124E+04	4.7708E+04	-2.7448E+02	1.1382E+04	1.9481E+02
3.8827E+02	7.5202E+02	2.9247E+02	-9.9593E+03	1.8484E+04	6.2439E+04	-2.7448E+02	1.1074E+04	2.0229E+03
3.8827E+02	6.9631E+02	1.1699E+03	-9.9593E+03	1.5843E+04	3.9065E+05	-2.7448E+02	1.0766E+04	4.1914E+03
3.8827E+02	6.6846E+02	2.6979E+03	-9.9593E+03	1.3203E+04	5.6933E+05	-2.7448E+02	1.0459E+04	6.9330E+03
3.8827E+02	6.4061E+02	5.1763E+03	-9.9593E+03	1.0562E+04	1.1909E+06	-2.7448E+02	1.0151E+04	3.6746E+03
3.8827E+02	6.1276E+02	4.2490E+03	-9.9593E+03	7.9215E+03	1.4345E+06	-2.7448E+02	9.8436E+03	7.0661E+03
3.8827E+02	5.8490E+02	6.2412E+03	-9.9593E+03	5.2810E+03	1.7985E+06	-2.7448E+02	9.5360E+03	1.2506E+04
3.8827E+02	5.5705E+02	6.6310E+03	-9.9593E+03	2.6405E+03	9.6935E+05	-2.7448E+02	9.2284E+03	4.8260E+04
3.8827E+02	5.2920E+02	9.0681E+03	-9.9593E+03	0.0000E+00	1.4013E+07	-2.7448E+02	8.9207E+03	7.0937E+04
3.8827E+02	5.0135E+02	3.1117E+04	-1.2753E+04	1.3203E+05	3.5000E+00	-2.7448E+02	8.6131E+03	7.7193E+04
3.8827E+02	4.7349E+02	2.7661E+04	-1.2753E+04	1.2938E+05	3.5000E+00	-2.7448E+02	8.3055E+03	3.7522E+04
3.8827E+02	4.4564E+02	6.7540E+04	-1.2753E+04	1.2674E+05	1.7500E+00	-2.7448E+02	7.9979E+03	2.3309E+04
3.8827E+02	4.1779E+02	9.8093E+04	-1.2753E+04	1.2410E+05	3.5000E+00	-2.7448E+02	7.6903E+03	6.2379E+04
3.8827E+02	3.8994E+02	1.2120E+05	-1.2753E+04	1.2146E+05	8.7500E+00	-2.7448E+02	7.3827E+03	7.5628E+04
3.8827E+02	3.6208E+02	1.7137E+05	-1.2753E+04	1.1882E+05	5.2500E+00	-2.7448E+02	7.0751E+03	1.1086E+05
3.8827E+02	3.3423E+02	2.3443E+05	-1.2753E+04	1.1618E+05	5.2500E+00	-2.7448E+02	6.7675E+03	4.9614E+04
3.8827E+02	3.0638E+02	2.4961E+05	-1.2753E+04	1.1354E+05	1.7500E+00	-2.7448E+02	6.4598E+03	1.3696E+05
3.8827E+02	2.7853E+02	4.7278E+05	-1.2753E+04	1.0826E+05	1.7500E+00	-2.7448E+02	6.1522E+03	1.8931E+05
3.8827E+02	2.5067E+02	7.0935E+05	-1.2753E+04	1.0562E+05	3.5000E+00	-2.7448E+02	5.8446E+03	1.8535E+05
3.8827E+02	2.2282E+02	1.0987E+06	-1.2753E+04	1.0298E+05	1.7500E+00	-2.7448E+02	5.5370E+03	1.5090E+05
3.8827E+02	1.9497E+02	1.6596E+06	-1.2753E+04	1.0034E+05	1.7500E+00	-2.7448E+02	5.2294E+03	2.4039E+05
3.8827E+02	1.6712E+02	2.3767E+06	-1.2753E+04	9.2418E+04	1.7500E+00	-2.7448E+02	4.9218E+03	2.4340E+05
3.8827E+02	1.3926E+02	3.2343E+06	-1.2753E+04	6.8653E+04	5.6333E+01	-2.7448E+02	4.6142E+03	5.8915E+05
3.8827E+02	1.1141E+02	5.1043E+06	-1.2753E+04	6.6013E+04	9.1340E+00	-2.7448E+02	4.3066E+03	4.0314E+05
3.8827E+02	8.3558E+01	6.4064E+06	-1.2753E+04	6.3372E+04	1.2500E+00	-2.7448E+02	3.9990E+03	7.5162E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
3.8827E+02	5.5705E+01	8.5843E+06	-1.2753E+04	6.0732E+04	1.6625E+00	-2.7448E+02	3.6913E+03	9.3673E+05
3.8827E+02	2.7853E+01	1.4853E+07	-1.2753E+04	5.8091E+04	2.2189E+01	-2.7448E+02	3.3837E+03	1.0844E+06
3.8827E+02	0.0000E+00	2.2919E+07	-1.2753E+04	5.5451E+04	4.1250E-01	-2.7448E+02	3.0761E+03	1.2878E+06
3.6006E+02	8.6343E+02	8.3335E+01	-1.2753E+04	5.2810E+04	1.3268E+01	-2.7448E+02	2.7685E+03	2.2672E+06
3.6006E+02	7.5202E+02	9.7405E+01	-1.2753E+04	5.0170E+04	5.5540E+01	-2.7448E+02	2.4609E+03	2.2426E+06
3.6006E+02	7.2417E+02	3.8988E+02	-1.2753E+04	4.7529E+04	2.1010E+02	-2.7448E+02	2.1533E+03	3.4956E+06
3.6006E+02	6.9631E+02	9.8447E+01	-1.2753E+04	4.4889E+04	4.3845E+02	-2.7448E+02	1.8457E+03	4.3227E+06
3.6006E+02	6.6846E+02	1.2513E+03	-1.2753E+04	4.2248E+04	1.1322E+02	-2.7448E+02	1.5381E+03	5.1339E+06
3.6006E+02	6.4061E+02	3.6724E+03	-1.2753E+04	3.9608E+04	1.2044E+02	-2.7448E+02	1.2304E+03	5.6170E+06
3.6006E+02	6.1276E+02	5.3738E+03	-1.2753E+04	3.6967E+04	1.1732E+03	-2.7448E+02	9.2284E+02	5.2741E+06
3.6006E+02	5.8490E+02	1.2350E+04	-1.2753E+04	3.4327E+04	1.1222E+04	-2.7448E+02	6.1522E+02	7.1653E+06
3.6006E+02	5.5705E+02	1.4296E+04	-1.2753E+04	3.1686E+04	1.9964E+04	-2.7448E+02	3.0761E+02	1.7266E+07
3.6006E+02	5.2920E+02	1.4729E+04	-1.2753E+04	2.9046E+04	1.2695E+04	-2.7448E+02	0.0000E+00	4.0202E+07
3.6006E+02	5.0135E+02	1.7629E+04	-1.2753E+04	2.6405E+04	2.6756E+04	-6.7296E+02	1.5381E+04	9.7405E+01
3.6006E+02	4.7349E+02	3.3099E+04	-1.2753E+04	2.3765E+04	6.8485E+04	-6.7296E+02	1.5073E+04	1.9481E+02
3.6006E+02	4.4564E+02	5.4289E+04	-1.2753E+04	2.1124E+04	1.0580E+05	-6.7296E+02	1.3535E+04	7.6400E+02
3.6006E+02	4.1779E+02	6.3903E+04	-1.2753E+04	1.8484E+04	1.8715E+05	-6.7296E+02	1.2920E+04	1.7304E+03
3.6006E+02	3.8994E+02	9.4974E+04	-1.2753E+04	1.5843E+04	5.8255E+05	-6.7296E+02	1.2612E+04	7.6400E+02
3.6006E+02	3.6208E+02	1.8176E+05	-1.2753E+04	1.3203E+04	7.3127E+05	-6.7296E+02	1.2304E+04	4.8728E+02
3.6006E+02	3.3423E+02	2.6116E+05	-1.2753E+04	1.0562E+04	1.4849E+06	-6.7296E+02	1.1689E+04	2.7869E+03
3.6006E+02	3.0638E+02	3.0744E+05	-1.2753E+04	7.9215E+03	2.0772E+06	-6.7296E+02	1.1382E+04	6.8339E+02
3.6006E+02	2.7853E+02	4.2135E+05	-1.2753E+04	5.2810E+03	1.9606E+06	-6.7296E+02	1.1074E+04	2.7902E+03
3.6006E+02	2.5067E+02	6.3703E+05	-1.2753E+04	2.6405E+03	1.1453E+06	-6.7296E+02	1.0766E+04	2.9247E+02
3.6006E+02	2.2282E+02	7.8370E+05	-1.2753E+04	0.0000E+00	1.7857E+07	-6.7296E+02	1.0459E+04	1.6011E+03
3.6006E+02	1.9497E+02	1.0946E+06	-1.5547E+04	1.2674E+05	3.5000E+00	-6.7296E+02	1.0151E+04	9.5595E+03
3.6006E+02	1.6712E+02	1.4976E+06	-1.5547E+04	1.2410E+05	3.5000E+00	-6.7296E+02	9.8436E+03	2.1197E+04
3.6006E+02	1.3926E+02	2.5011E+06	-1.5547E+04	1.2146E+05	1.7500E+00	-6.7296E+02	9.5360E+03	4.9628E+04
3.6006E+02	1.1141E+02	3.7383E+06	-1.5547E+04	1.1882E+05	1.7500E+00	-6.7296E+02	9.2284E+03	4.1740E+04
3.6006E+02	8.3558E+01	4.8239E+06	-1.5547E+04	1.1618E+05	3.5000E+00	-6.7296E+02	8.9207E+03	7.4064E+04
3.6006E+02	5.5705E+01	7.7693E+06	-1.5547E+04	1.1090E+05	6.9585E+00	-6.7296E+02	8.6131E+03	4.2960E+04
3.6006E+02	2.7853E+01	1.2430E+07	-1.5547E+04	1.0034E+05	1.7500E+00	-6.7296E+02	8.3055E+03	6.8001E+04
3.6006E+02	0.0000E+00	2.0994E+07	-1.5547E+04	8.1856E+04	1.7500E+00	-6.7296E+02	7.9979E+03	8.1553E+04
3.3185E+02	9.1913E+02	4.6875E+01	-1.5547E+04	7.6575E+04	1.2500E+00	-6.7296E+02	7.6903E+03	7.8245E+04
3.3185E+02	8.0772E+02	8.3335E+01	-1.5547E+04	7.3934E+04	5.9245E+01	-6.7296E+02	7.3827E+03	5.9605E+04
3.3185E+02	7.7987E+02	8.3335E+01	-1.5547E+04	6.8653E+04	2.9125E+00	-6.7296E+02	7.0751E+03	1.0659E+05
3.3185E+02	7.5202E+02	5.6574E+01	-1.5547E+04	6.6013E+04	2.1625E+00	-6.7296E+02	6.7675E+03	8.9521E+04
3.3185E+02	7.2417E+02	8.3335E+01	-1.5547E+04	6.3372E+04	7.4715E+00	-6.7296E+02	6.4598E+03	4.2435E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
3.3185E+02	6.9631E+02	4.8702E+02	-1.5547E+04	6.0732E+04	1.9080E+01	-6.7296E+02	6.1522E+03	6.8339E+04
3.3185E+02	6.6846E+02	6.1297E+02	-1.5547E+04	5.8091E+04	6.6340E+00	-6.7296E+02	5.8446E+03	1.7224E+05
3.3185E+02	6.4061E+02	8.7690E+02	-1.5547E+04	5.5451E+04	4.1022E+01	-6.7296E+02	5.5370E+03	1.4430E+05
3.3185E+02	6.1276E+02	2.1049E+03	-1.5547E+04	5.2810E+04	2.6549E+01	-6.7296E+02	5.2294E+03	1.7128E+05
3.3185E+02	5.8490E+02	1.9835E+03	-1.5547E+04	5.0170E+04	1.2443E+01	-6.7296E+02	4.9218E+03	2.8991E+05
3.3185E+02	5.5705E+02	7.6669E+03	-1.5547E+04	4.7529E+04	3.7184E+02	-6.7296E+02	4.6142E+03	2.4672E+05
3.3185E+02	5.2920E+02	6.1401E+03	-1.5547E+04	4.4889E+04	6.2215E+01	-6.7296E+02	4.3066E+03	4.0862E+05
3.3185E+02	5.0135E+02	2.1230E+04	-1.5547E+04	4.2248E+04	4.9797E+02	-6.7296E+02	3.9990E+03	6.7673E+05
3.3185E+02	4.7349E+02	2.2659E+04	-1.5547E+04	3.9608E+04	2.6317E+02	-6.7296E+02	3.6913E+03	7.8848E+05
3.3185E+02	4.4564E+02	5.2065E+04	-1.5547E+04	3.6967E+04	6.0374E+02	-6.7296E+02	3.3837E+03	8.4406E+05
3.3185E+02	4.1779E+02	4.5263E+04	-1.5547E+04	3.4327E+04	2.6037E+04	-6.7296E+02	3.0761E+03	1.2999E+06
3.3185E+02	3.8994E+02	6.2294E+04	-1.5547E+04	3.1686E+04	2.9921E+04	-6.7296E+02	2.7685E+03	1.6594E+06
3.3185E+02	3.6208E+02	7.2021E+04	-1.5547E+04	2.9046E+04	9.9865E+03	-6.7296E+02	2.4609E+03	2.1679E+06
3.3185E+02	3.3423E+02	1.3236E+05	-1.5547E+04	2.6405E+04	9.7819E+03	-6.7296E+02	2.1533E+03	2.3382E+06
3.3185E+02	3.0638E+02	1.5583E+05	-1.5547E+04	2.3765E+04	3.3183E+04	-6.7296E+02	1.8457E+03	3.5379E+06
3.3185E+02	2.7853E+02	2.6775E+05	-1.5547E+04	2.1124E+04	5.1961E+03	-6.7296E+02	1.5381E+03	3.2374E+06
3.3185E+02	2.5067E+02	3.5719E+05	-1.5547E+04	1.8484E+04	3.0721E+04	-6.7296E+02	1.2304E+03	3.4469E+06
3.3185E+02	2.2282E+02	5.3246E+05	-1.5547E+04	1.5843E+04	1.2611E+05	-6.7296E+02	9.2284E+02	3.5807E+06
3.3185E+02	1.9497E+02	6.9978E+05	-1.5547E+04	1.3203E+04	4.3983E+05	-6.7296E+02	6.1522E+02	4.7867E+06
3.3185E+02	1.6712E+02	1.0719E+06	-1.5547E+04	1.0562E+04	1.0212E+06	-6.7296E+02	3.0761E+02	1.1789E+07
3.3185E+02	1.3926E+02	1.6664E+06	-1.5547E+04	7.9215E+03	2.0550E+06	-6.7296E+02	0.0000E+00	2.7066E+07
3.3185E+02	1.1141E+02	2.8458E+06	-1.5547E+04	5.2810E+03	2.2670E+06	-1.0714E+03	1.4765E+04	2.9247E+02
3.3185E+02	8.3558E+01	4.1330E+06	-1.5547E+04	2.6405E+03	1.6531E+06	-1.0714E+03	1.4458E+04	2.9247E+02
3.3185E+02	5.5705E+01	6.6592E+06	-1.5547E+04	0.0000E+00	1.9618E+07	-1.0714E+03	1.3843E+04	2.9247E+02
3.3185E+02	2.7853E+01	1.4162E+07	-1.8342E+04	1.1882E+05	1.7500E+00	-1.0714E+03	1.3227E+04	5.8494E+02
3.3185E+02	0.0000E+00	1.9497E+07	-1.8342E+04	1.1618E+05	5.2085E+00	-1.0714E+03	1.2920E+04	2.9326E+02
3.0364E+02	9.7484E+02	6.9585E+00	-1.8342E+04	1.0826E+05	1.7500E+00	-1.0714E+03	1.2612E+04	2.6484E+03
3.0364E+02	9.4699E+02	1.2500E+02	-1.8342E+04	1.0298E+05	6.9585E+00	-1.0714E+03	1.2304E+04	3.8988E+02
3.0364E+02	9.1913E+02	8.3335E+01	-1.8342E+04	9.7699E+04	1.7500E+00	-1.0714E+03	1.1997E+04	3.4096E+03
3.0364E+02	8.3558E+02	2.8287E+01	-1.8342E+04	7.9215E+04	1.2500E+00	-1.0714E+03	1.1689E+04	2.9247E+02
3.0364E+02	8.0772E+02	1.1162E+02	-1.8342E+04	7.6575E+04	1.2500E+00	-1.0714E+03	1.1382E+04	1.0154E+03
3.0364E+02	7.7987E+02	9.7405E+01	-1.8342E+04	7.3934E+04	4.1250E-01	-1.0714E+03	1.1074E+04	1.0307E+04
3.0364E+02	7.5202E+02	8.4861E+01	-1.8342E+04	7.1294E+04	6.1745E+01	-1.0714E+03	1.0766E+04	1.0248E+04
3.0364E+02	7.2417E+02	2.2310E+02	-1.8342E+04	6.8653E+04	4.1250E-01	-1.0714E+03	1.0459E+04	1.7142E+04
3.0364E+02	6.9631E+02	5.6574E+01	-1.8342E+04	6.6013E+04	1.2500E+00	-1.0714E+03	1.0151E+04	2.4507E+04
3.0364E+02	6.6846E+02	1.2569E+02	-1.8342E+04	6.3372E+04	1.2500E+00	-1.0714E+03	9.8436E+03	2.3584E+04
3.0364E+02	6.4061E+02	1.2545E+03	-1.8342E+04	6.0732E+04	4.5750E+00	-1.0714E+03	9.5360E+03	1.8289E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
3.0364E+02	6.1276E+02	5.7616E+01	-1.8342E+04	5.8091E+04	5.7995E+01	-1.0714E+03	9.2284E+03	2.6738E+04
3.0364E+02	5.8490E+02	1.3187E+03	-1.8342E+04	5.5451E+04	1.5622E+02	-1.0714E+03	8.9207E+03	2.7854E+04
3.0364E+02	5.5705E+02	9.3639E+02	-1.8342E+04	5.2810E+04	1.9706E+01	-1.0714E+03	8.6131E+03	2.2536E+04
3.0364E+02	5.2920E+02	1.0740E+03	-1.8342E+04	5.0170E+04	1.5125E+02	-1.0714E+03	8.3055E+03	2.0300E+04
3.0364E+02	5.0135E+02	2.9297E+03	-1.8342E+04	4.7529E+04	3.2489E+02	-1.0714E+03	7.9979E+03	4.3204E+04
3.0364E+02	4.7349E+02	1.4630E+04	-1.8342E+04	4.4889E+04	3.5774E+03	-1.0714E+03	7.6903E+03	3.2001E+04
3.0364E+02	4.4564E+02	9.2785E+03	-1.8342E+04	4.2248E+04	1.5711E+02	-1.0714E+03	7.3827E+03	8.6613E+04
3.0364E+02	4.1779E+02	1.0862E+04	-1.8342E+04	3.9608E+04	2.3305E+02	-1.0714E+03	7.0751E+03	3.9008E+04
3.0364E+02	3.8994E+02	2.0015E+04	-1.8342E+04	3.6967E+04	5.4439E+02	-1.0714E+03	6.7675E+03	3.4450E+04
3.0364E+02	3.6208E+02	2.1756E+04	-1.8342E+04	3.4327E+04	8.4184E+02	-1.0714E+03	6.4598E+03	2.8546E+04
3.0364E+02	3.3423E+02	4.5424E+04	-1.8342E+04	3.1686E+04	1.9216E+04	-1.0714E+03	6.1522E+03	1.0375E+05
3.0364E+02	3.0638E+02	5.9370E+04	-1.8342E+04	2.9046E+04	1.1440E+04	-1.0714E+03	5.8446E+03	9.6595E+04
3.0364E+02	2.7853E+02	7.3046E+04	-1.8342E+04	2.6405E+04	2.9390E+03	-1.0714E+03	5.5370E+03	1.1474E+05
3.0364E+02	2.5067E+02	1.7126E+05	-1.8342E+04	2.3765E+04	4.5760E+03	-1.0714E+03	5.2294E+03	1.7897E+05
3.0364E+02	2.2282E+02	2.5477E+05	-1.8342E+04	2.1124E+04	4.6411E+03	-1.0714E+03	4.9218E+03	3.5703E+05
3.0364E+02	1.9497E+02	4.0467E+05	-1.8342E+04	1.8484E+04	6.1283E+03	-1.0714E+03	4.6142E+03	3.3329E+05
3.0364E+02	1.6712E+02	8.7527E+05	-1.8342E+04	1.5843E+04	7.6123E+04	-1.0714E+03	4.3066E+03	4.7358E+05
3.0364E+02	1.3926E+02	1.5811E+06	-1.8342E+04	1.3203E+04	6.8815E+04	-1.0714E+03	3.9990E+03	6.2499E+05
3.0364E+02	1.1141E+02	2.9556E+06	-1.8342E+04	1.0562E+04	4.9407E+05	-1.0714E+03	3.6913E+03	7.4300E+05
3.0364E+02	8.3558E+01	3.7588E+06	-1.8342E+04	7.9215E+03	1.2400E+06	-1.0714E+03	3.3837E+03	9.9305E+05
3.0364E+02	5.5705E+01	6.1006E+06	-1.8342E+04	5.2810E+03	2.0328E+06	-1.0714E+03	3.0761E+03	1.1766E+06
3.0364E+02	2.7853E+01	1.5119E+07	-1.8342E+04	2.6405E+03	1.7198E+06	-1.0714E+03	2.7685E+03	1.4148E+06
3.0364E+02	0.0000E+00	1.8198E+07	-1.8342E+04	0.0000E+00	1.9023E+07	-1.0714E+03	2.4609E+03	1.6300E+06
2.7543E+02	1.0027E+03	1.0417E+01	-2.1136E+04	1.0826E+05	1.0417E+01	-1.0714E+03	2.1533E+03	2.0303E+06
2.7543E+02	9.7484E+02	4.1667E+01	-2.1136E+04	1.0562E+05	5.2085E+00	-1.0714E+03	1.8457E+03	2.0923E+06
2.7543E+02	9.4699E+02	4.6875E+01	-2.1136E+04	1.0034E+05	5.2085E+00	-1.0714E+03	1.5381E+03	2.5485E+06
2.7543E+02	9.1913E+02	9.0292E+01	-2.1136E+04	7.9215E+04	1.7500E+00	-1.0714E+03	1.2304E+03	2.2429E+06
2.7543E+02	8.9128E+02	1.7500E+00	-2.1136E+04	7.3934E+04	1.6625E+00	-1.0714E+03	9.2284E+02	2.4374E+06
2.7543E+02	8.6343E+02	2.2917E+00	-2.1136E+04	7.1294E+04	5.7583E+01	-1.0714E+03	6.1522E+02	3.9275E+06
2.7543E+02	8.3558E+02	1.2500E+00	-2.1136E+04	6.8653E+04	1.2500E+00	-1.0714E+03	3.0761E+02	8.9262E+06
2.7543E+02	8.0772E+02	3.5579E+01	-2.1136E+04	6.6013E+04	9.9492E+01	-1.0714E+03	0.0000E+00	2.0026E+07
2.7543E+02	7.7987E+02	2.2413E+01	-2.1136E+04	6.3372E+04	1.9461E+02	-1.4699E+03	1.5381E+04	2.8287E+01
2.7543E+02	7.5202E+02	2.9112E+01	-2.1136E+04	6.0732E+04	6.4499E+00	-1.4699E+03	1.4458E+04	9.7405E+01
2.7543E+02	7.2417E+02	1.0394E+02	-2.1136E+04	5.8091E+04	5.6166E+00	-1.4699E+03	1.3843E+04	2.9247E+02
2.7543E+02	6.1276E+02	5.9899E+01	-2.1136E+04	5.5451E+04	3.0579E+01	-1.4699E+03	1.3535E+04	1.9481E+02
2.7543E+02	5.8490E+02	2.5347E+02	-2.1136E+04	5.2810E+04	1.6971E+02	-1.4699E+03	1.3227E+04	4.1816E+02
2.7543E+02	5.5705E+02	2.6315E+02	-2.1136E+04	4.7529E+04	7.2632E+00	-1.4699E+03	1.2920E+04	3.5004E+02

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.7543E+02	5.2920E+02	3.3035E+02	-2.1136E+04	4.4889E+04	1.6010E+02	-1.4699E+03	1.2612E+04	2.2386E+03
2.7543E+02	5.0135E+02	3.2594E+02	-2.1136E+04	4.2248E+04	1.4185E+02	-1.4699E+03	1.2304E+04	8.6141E+02
2.7543E+02	4.7349E+02	1.0740E+03	-2.1136E+04	3.9608E+04	3.0622E+02	-1.4699E+03	1.1997E+04	9.7455E+02
2.7543E+02	4.4564E+02	1.3736E+03	-2.1136E+04	3.6967E+04	4.5153E+02	-1.4699E+03	1.1689E+04	3.0435E+03
2.7543E+02	4.1779E+02	1.6830E+03	-2.1136E+04	3.4327E+04	8.1532E+02	-1.4699E+03	1.1382E+04	9.9166E+03
2.7543E+02	3.8994E+02	4.5545E+03	-2.1136E+04	3.1686E+04	8.4281E+02	-1.4699E+03	1.1074E+04	8.4852E+03
2.7543E+02	3.6208E+02	1.4401E+04	-2.1136E+04	2.9046E+04	1.8621E+03	-1.4699E+03	1.0766E+04	7.6753E+03
2.7543E+02	3.3423E+02	1.2968E+04	-2.1136E+04	2.6405E+04	3.3229E+03	-1.4699E+03	1.0459E+04	9.2833E+03
2.7543E+02	3.0638E+02	3.2780E+04	-2.1136E+04	2.3765E+04	3.0519E+03	-1.4699E+03	1.0151E+04	1.1719E+04
2.7543E+02	2.7853E+02	2.8530E+04	-2.1136E+04	2.1124E+04	4.9214E+03	-1.4699E+03	9.8436E+03	7.8251E+03
2.7543E+02	2.5067E+02	6.5190E+04	-2.1136E+04	1.8484E+04	2.9681E+03	-1.4699E+03	9.5360E+03	2.0197E+04
2.7543E+02	2.2282E+02	6.8208E+04	-2.1136E+04	1.5843E+04	2.3159E+04	-1.4699E+03	9.2284E+03	1.4103E+04
2.7543E+02	1.9497E+02	1.4645E+05	-2.1136E+04	1.3203E+04	1.6426E+05	-1.4699E+03	8.9207E+03	1.7743E+04
2.7543E+02	1.6712E+02	3.5568E+05	-2.1136E+04	1.0562E+04	3.0630E+05	-1.4699E+03	8.6131E+03	1.7662E+04
2.7543E+02	1.3926E+02	1.0387E+06	-2.1136E+04	7.9215E+03	1.5754E+06	-1.4699E+03	8.3055E+03	1.5671E+04
2.7543E+02	1.1141E+02	1.7889E+06	-2.1136E+04	5.2810E+03	2.6084E+06	-1.4699E+03	7.9979E+03	4.6253E+03
2.7543E+02	8.3558E+01	2.5422E+06	-2.1136E+04	2.6405E+03	2.3474E+06	-1.4699E+03	7.6903E+03	1.6359E+04
2.7543E+02	5.5705E+01	5.4843E+06	-2.1136E+04	0.0000E+00	2.0296E+07	-1.4699E+03	7.3827E+03	4.4770E+04
2.7543E+02	2.7853E+01	1.3225E+07	-2.3930E+04	1.0298E+05	5.2085E+00	-1.4699E+03	7.0751E+03	3.1809E+04
2.7543E+02	0.0000E+00	1.6763E+07	-2.3930E+04	1.0034E+05	5.2085E+00	-1.4699E+03	6.7675E+03	4.2789E+04
2.4722E+02	1.1420E+03	5.2085E+00	-2.3930E+04	9.7699E+04	1.7375E+01	-1.4699E+03	6.4598E+03	3.9367E+04
2.4722E+02	1.0584E+03	5.2085E+00	-2.3930E+04	9.5058E+04	5.2085E+00	-1.4699E+03	6.1522E+03	5.7957E+04
2.4722E+02	1.0305E+03	4.6875E+01	-2.3930E+04	9.2418E+04	4.1667E+01	-1.4699E+03	5.8446E+03	9.6253E+04
2.4722E+02	1.0027E+03	5.3833E+01	-2.3930E+04	8.9777E+04	5.2085E+00	-1.4699E+03	5.5370E+03	1.1733E+05
2.4722E+02	9.7484E+02	5.2085E+00	-2.3930E+04	8.1856E+04	6.9585E+00	-1.4699E+03	5.2294E+03	2.0050E+05
2.4722E+02	9.4699E+02	4.1667E+01	-2.3930E+04	7.6575E+04	1.7500E+00	-1.4699E+03	4.9218E+03	1.5960E+05
2.4722E+02	8.9128E+02	4.1250E-01	-2.3930E+04	7.1294E+04	1.2500E+00	-1.4699E+03	4.6142E+03	2.7990E+05
2.4722E+02	8.6343E+02	9.1210E+00	-2.3930E+04	6.6013E+04	3.5417E+00	-1.4699E+03	4.3066E+03	3.8945E+05
2.4722E+02	8.0772E+02	4.8666E+00	-2.3930E+04	6.3372E+04	3.1412E+01	-1.4699E+03	3.9990E+03	5.4336E+05
2.4722E+02	7.7987E+02	7.2874E+00	-2.3930E+04	6.0732E+04	4.5791E+00	-1.4699E+03	3.6913E+03	5.4222E+05
2.4722E+02	7.5202E+02	1.3404E+02	-2.3930E+04	5.8091E+04	4.7875E+00	-1.4699E+03	3.3837E+03	7.3720E+05
2.4722E+02	7.2417E+02	2.3042E+01	-2.3930E+04	5.5451E+04	2.0833E+00	-1.4699E+03	3.0761E+03	9.8797E+05
2.4722E+02	6.9631E+02	1.8245E+02	-2.3930E+04	5.2810E+04	2.9329E+01	-1.4699E+03	2.7685E+03	1.0328E+06
2.4722E+02	6.6846E+02	2.8287E+01	-2.3930E+04	4.7529E+04	5.6574E+01	-1.4699E+03	2.4609E+03	1.3964E+06
2.4722E+02	6.1276E+02	7.8749E+02	-2.3930E+04	4.4889E+04	2.6315E+02	-1.4699E+03	2.1533E+03	1.4584E+06
2.4722E+02	5.8490E+02	5.6574E+01	-2.3930E+04	4.2248E+04	1.6972E+02	-1.4699E+03	1.8457E+03	1.5899E+06
2.4722E+02	5.5705E+02	1.5224E+02	-2.3930E+04	3.9608E+04	2.9185E+02	-1.4699E+03	1.5381E+03	1.7847E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.4722E+02	5.2920E+02	3.1068E+02	-2.3930E+04	3.6967E+04	2.8495E+02	-1.4699E+03	1.2304E+03	1.7099E+06
2.4722E+02	5.0135E+02	6.7510E+02	-2.3930E+04	3.4327E+04	4.3909E+02	-1.4699E+03	9.2284E+02	1.6715E+06
2.4722E+02	4.7349E+02	1.0199E+03	-2.3930E+04	3.1686E+04	9.5374E+02	-1.4699E+03	6.1522E+02	2.6490E+06
2.4722E+02	4.4564E+02	8.6587E+02	-2.3930E+04	2.9046E+04	1.0258E+04	-1.4699E+03	3.0761E+02	6.7537E+06
2.4722E+02	4.1779E+02	5.7633E+02	-2.3930E+04	2.6405E+04	1.2917E+03	-1.4699E+03	0.0000E+00	1.4306E+07
2.4722E+02	3.8994E+02	1.4727E+03	-2.3930E+04	2.3765E+04	1.7410E+03	-1.8684E+03	1.4458E+04	9.7405E+01
2.4722E+02	3.6208E+02	3.1818E+03	-2.3930E+04	2.1124E+04	1.6451E+03	-1.8684E+03	1.3843E+04	7.6400E+02
2.4722E+02	3.3423E+02	4.8132E+03	-2.3930E+04	1.8484E+04	2.4506E+04	-1.8684E+03	1.3535E+04	3.8988E+02
2.4722E+02	3.0638E+02	2.7188E+04	-2.3930E+04	1.5843E+04	4.5456E+04	-1.8684E+03	1.3227E+04	1.2569E+02
2.4722E+02	2.7853E+02	1.7975E+04	-2.3930E+04	1.3203E+04	1.1508E+05	-1.8684E+03	1.2920E+04	9.1441E+02
2.4722E+02	2.5067E+02	2.3335E+04	-2.3930E+04	1.0562E+04	3.1385E+05	-1.8684E+03	1.2612E+04	4.8728E+02
2.4722E+02	2.2282E+02	4.3747E+04	-2.3930E+04	7.9215E+03	1.0302E+06	-1.8684E+03	1.2304E+04	2.9351E+02
2.4722E+02	1.9497E+02	1.2198E+05	-2.3930E+04	5.2810E+03	2.2546E+06	-1.8684E+03	1.1997E+04	5.8573E+02
2.4722E+02	1.6712E+02	2.7809E+05	-2.3930E+04	2.6405E+03	2.2768E+06	-1.8684E+03	1.1689E+04	1.5622E+02
2.4722E+02	1.3926E+02	5.2072E+05	-2.3930E+04	0.0000E+00	1.6860E+07	-1.8684E+03	1.1382E+04	9.9373E+02
2.4722E+02	1.1141E+02	1.5082E+06	-2.6724E+04	1.0562E+05	5.2085E+00	-1.8684E+03	1.1074E+04	1.1166E+03
2.4722E+02	8.3558E+01	2.3306E+06	-2.6724E+04	1.0298E+05	5.2085E+00	-1.8684E+03	1.0766E+04	5.4708E+03
2.4722E+02	5.5705E+01	3.5551E+06	-2.6724E+04	9.7699E+04	8.8542E+01	-1.8684E+03	1.0459E+04	4.0243E+02
2.4722E+02	2.7853E+01	1.2665E+07	-2.6724E+04	9.5058E+04	4.1667E+01	-1.8684E+03	1.0151E+04	1.9431E+03
2.4722E+02	0.0000E+00	1.8075E+07	-2.6724E+04	9.2418E+04	6.9585E+00	-1.8684E+03	9.8436E+03	1.4592E+03
2.1901E+02	1.1141E+03	1.0417E+01	-2.6724E+04	8.9777E+04	1.2675E+02	-1.8684E+03	9.5360E+03	2.0748E+03
2.1901E+02	1.0862E+03	1.0417E+01	-2.6724E+04	8.7137E+04	1.7500E+00	-1.8684E+03	9.2284E+03	9.0372E+03
2.1901E+02	1.0584E+03	5.2085E+00	-2.6724E+04	7.6575E+04	6.9585E+00	-1.8684E+03	8.9207E+03	4.1349E+03
2.1901E+02	1.0305E+03	4.3417E+01	-2.6724E+04	6.6013E+04	2.8287E+01	-1.8684E+03	8.6131E+03	7.4453E+03
2.1901E+02	9.7484E+02	1.0417E+01	-2.6724E+04	6.3372E+04	1.0417E+00	-1.8684E+03	8.3055E+03	9.5472E+03
2.1901E+02	9.4699E+02	7.7085E+00	-2.6724E+04	6.0732E+04	2.8287E+01	-1.8684E+03	7.9979E+03	7.2637E+03
2.1901E+02	8.9128E+02	1.2500E+00	-2.6724E+04	5.8091E+04	5.6574E+01	-1.8684E+03	7.6903E+03	3.2124E+03
2.1901E+02	8.3558E+02	5.0000E+00	-2.6724E+04	5.2810E+04	2.8287E+01	-1.8684E+03	7.3827E+03	2.3585E+04
2.1901E+02	8.0772E+02	2.5750E+00	-2.6724E+04	5.0170E+04	2.8287E+01	-1.8684E+03	7.0751E+03	2.3319E+04
2.1901E+02	7.7987E+02	7.7042E+00	-2.6724E+04	4.7529E+04	5.6574E+01	-1.8684E+03	6.7675E+03	3.3109E+04
2.1901E+02	7.5202E+02	2.1988E+01	-2.6724E+04	4.4889E+04	1.6972E+02	-1.8684E+03	6.4598E+03	2.5292E+04
2.1901E+02	7.2417E+02	1.6625E+00	-2.6724E+04	4.2248E+04	8.4861E+01	-1.8684E+03	6.1522E+03	4.3511E+04
2.1901E+02	6.9631E+02	3.2870E+01	-2.6724E+04	3.9608E+04	1.8451E+02	-1.8684E+03	5.8446E+03	4.5028E+04
2.1901E+02	6.6846E+02	8.7120E+01	-2.6724E+04	3.6967E+04	2.5458E+02	-1.8684E+03	5.5370E+03	1.1506E+05
2.1901E+02	6.4061E+02	1.3485E+01	-2.6724E+04	3.4327E+04	4.1978E+02	-1.8684E+03	5.2294E+03	1.2456E+05
2.1901E+02	6.1276E+02	6.2215E+00	-2.6724E+04	3.1686E+04	9.4644E+03	-1.8684E+03	4.9218E+03	1.8567E+05
2.1901E+02	5.8490E+02	1.1315E+02	-2.6724E+04	2.9046E+04	4.5764E+03	-1.8684E+03	4.6142E+03	1.9726E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.1901E+02	5.5705E+02	3.6619E+02	-2.6724E+04	2.6405E+04	7.4992E+02	-1.8684E+03	4.3066E+03	1.9130E+05
2.1901E+02	5.2920E+02	3.3217E+02	-2.6724E+04	2.3765E+04	1.1321E+04	-1.8684E+03	3.9990E+03	4.0100E+05
2.1901E+02	5.0135E+02	5.5659E+02	-2.6724E+04	2.1124E+04	1.0691E+04	-1.8684E+03	3.6913E+03	4.0216E+05
2.1901E+02	4.7349E+02	5.0133E+02	-2.6724E+04	1.8484E+04	1.8994E+03	-1.8684E+03	3.3837E+03	7.5114E+05
2.1901E+02	4.4564E+02	1.5388E+03	-2.6724E+04	1.5843E+04	1.5772E+04	-1.8684E+03	3.0761E+03	6.6220E+05
2.1901E+02	4.1779E+02	2.0692E+03	-2.6724E+04	1.3203E+04	2.3254E+04	-1.8684E+03	2.7685E+03	8.2947E+05
2.1901E+02	3.8994E+02	3.9054E+03	-2.6724E+04	1.0562E+04	3.8648E+05	-1.8684E+03	2.4609E+03	9.6883E+05
2.1901E+02	3.6208E+02	2.3582E+03	-2.6724E+04	7.9215E+03	1.0395E+06	-1.8684E+03	2.1533E+03	1.2089E+06
2.1901E+02	3.3423E+02	4.9752E+03	-2.6724E+04	5.2810E+03	2.2126E+06	-1.8684E+03	1.8457E+03	1.3019E+06
2.1901E+02	3.0638E+02	5.4942E+03	-2.6724E+04	2.6405E+03	3.3849E+06	-1.8684E+03	1.5381E+03	1.2541E+06
2.1901E+02	2.7853E+02	7.4205E+03	-2.6724E+04	0.0000E+00	1.7574E+07	-1.8684E+03	1.2304E+03	1.0820E+06
2.1901E+02	2.5067E+02	6.1922E+03	-2.9518E+04	9.7699E+04	5.2085E+00	-1.8684E+03	9.2284E+02	1.2961E+06
2.1901E+02	2.2282E+02	2.8414E+04	-2.9518E+04	9.5058E+04	4.6875E+01	-1.8684E+03	6.1522E+02	2.1180E+06
2.1901E+02	1.9497E+02	7.3806E+04	-2.9518E+04	9.2418E+04	4.1667E+01	-1.8684E+03	3.0761E+02	5.2250E+06
2.1901E+02	1.6712E+02	1.8322E+05	-2.9518E+04	8.9777E+04	1.2500E+02	-1.8684E+03	0.0000E+00	1.0546E+07
2.1901E+02	1.3926E+02	5.7886E+05	-2.9518E+04	8.7137E+04	4.1667E+01	-2.2669E+03	1.3535E+04	2.8287E+01
2.1901E+02	1.1141E+02	1.7816E+06	-2.9518E+04	8.1856E+04	4.1667E+01	-2.2669E+03	1.2920E+04	1.0417E+00
2.1901E+02	8.3558E+01	2.8288E+06	-2.9518E+04	7.6575E+04	8.3335E+01	-2.2669E+03	1.2304E+04	1.0363E+02
2.1901E+02	5.5705E+01	3.5411E+06	-2.9518E+04	6.8653E+04	2.8287E+01	-2.2669E+03	1.1997E+04	7.6441E+02
2.1901E+02	2.7853E+01	1.4908E+07	-2.9518E+04	5.8091E+04	2.8287E+01	-2.2669E+03	1.1689E+04	5.8866E+01
2.1901E+02	0.0000E+00	2.2804E+07	-2.9518E+04	5.2810E+04	2.8287E+01	-2.2669E+03	1.1382E+04	4.2290E+02
1.9081E+02	9.4699E+02	5.8083E+01	-2.9518E+04	4.2248E+04	2.8287E+01	-2.2669E+03	1.1074E+04	8.6038E+02
1.9081E+02	8.0772E+02	1.1642E+02	-2.9518E+04	3.9608E+04	3.9407E+02	-2.2669E+03	1.0766E+04	7.2034E+02
1.9081E+02	7.7987E+02	1.2500E+00	-2.9518E+04	3.6967E+04	5.8236E+01	-2.2669E+03	1.0459E+04	4.5135E+02
1.9081E+02	7.5202E+02	5.0000E+00	-2.9518E+04	3.4327E+04	4.3741E+02	-2.2669E+03	1.0151E+04	2.5513E+03
1.9081E+02	7.2417E+02	4.5750E+00	-2.9518E+04	3.1686E+04	9.5953E+03	-2.2669E+03	9.8436E+03	4.6762E+03
1.9081E+02	6.9631E+02	1.6625E+00	-2.9518E+04	2.9046E+04	1.0493E+04	-2.2669E+03	9.5360E+03	1.2279E+03
1.9081E+02	6.4061E+02	4.1250E-01	-2.9518E+04	2.6405E+04	1.9262E+03	-2.2669E+03	9.2284E+03	1.9128E+03
1.9081E+02	6.1276E+02	2.1695E+02	-2.9518E+04	2.3765E+04	1.0417E+04	-2.2669E+03	8.9207E+03	5.6772E+03
1.9081E+02	5.8490E+02	2.7260E+02	-2.9518E+04	2.1124E+04	3.7877E+03	-2.2669E+03	8.6131E+03	4.5216E+03
1.9081E+02	5.5705E+02	9.7405E+01	-2.9518E+04	1.8484E+04	2.3276E+04	-2.2669E+03	8.3055E+03	5.5345E+03
1.9081E+02	5.2920E+02	8.1460E+01	-2.9518E+04	1.5843E+04	5.5751E+04	-2.2669E+03	7.9979E+03	2.4504E+03
1.9081E+02	5.0135E+02	5.9802E+02	-2.9518E+04	1.3203E+04	6.8128E+04	-2.2669E+03	7.6903E+03	1.0045E+04
1.9081E+02	4.7349E+02	1.4582E+03	-2.9518E+04	1.0562E+04	4.1829E+05	-2.2669E+03	7.3827E+03	5.9578E+03
1.9081E+02	4.4564E+02	1.7336E+03	-2.9518E+04	7.9215E+03	1.2209E+06	-2.2669E+03	7.0751E+03	3.0123E+03
1.9081E+02	4.1779E+02	2.5634E+03	-2.9518E+04	5.2810E+03	2.7018E+06	-2.2669E+03	6.7675E+03	2.0841E+04
1.9081E+02	3.8994E+02	2.0606E+03	-2.9518E+04	2.6405E+03	4.5868E+06	-2.2669E+03	6.4598E+03	3.1413E+04

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.9081E+02	3.6208E+02	1.3351E+04	-2.9518E+04	0.0000E+00	1.7949E+07	-2.2669E+03	6.1522E+03	4.6789E+04
1.9081E+02	3.3423E+02	2.1249E+04	-3.2312E+04	9.5058E+04	5.2085E+00	-2.2669E+03	5.8446E+03	3.0311E+04
1.9081E+02	3.0638E+02	5.1751E+03	-3.2312E+04	8.7137E+04	5.2085E+00	-2.2669E+03	5.5370E+03	7.5507E+04
1.9081E+02	2.7853E+02	7.0182E+03	-3.2312E+04	7.6575E+04	1.6667E+02	-2.2669E+03	5.2294E+03	9.0636E+04
1.9081E+02	2.5067E+02	8.9128E+03	-3.2312E+04	7.1294E+04	8.3335E+01	-2.2669E+03	4.9218E+03	1.2820E+05
1.9081E+02	2.2282E+02	2.8727E+04	-3.2312E+04	6.0732E+04	2.8287E+01	-2.2669E+03	4.6142E+03	1.8352E+05
1.9081E+02	1.9497E+02	1.1019E+05	-3.2312E+04	5.2810E+04	2.8287E+01	-2.2669E+03	4.3066E+03	2.0924E+05
1.9081E+02	1.6712E+02	1.2863E+05	-3.2312E+04	5.0170E+04	2.8287E+01	-2.2669E+03	3.9990E+03	2.4194E+05
1.9081E+02	1.3926E+02	6.5057E+05	-3.2312E+04	4.7529E+04	2.9221E+02	-2.2669E+03	3.6913E+03	4.0535E+05
1.9081E+02	1.1141E+02	1.3707E+06	-3.2312E+04	4.4889E+04	9.6595E+03	-2.2669E+03	3.3837E+03	5.1928E+05
1.9081E+02	8.3558E+01	2.0864E+06	-3.2312E+04	4.2248E+04	1.8834E+04	-2.2669E+03	3.0761E+03	6.3941E+05
1.9081E+02	5.5705E+01	2.3558E+06	-3.2312E+04	3.9608E+04	8.8996E+02	-2.2669E+03	2.7685E+03	6.8064E+05
1.9081E+02	2.7853E+01	1.4116E+07	-3.2312E+04	3.6967E+04	2.0106E+04	-2.2669E+03	2.4609E+03	8.1910E+05
1.9081E+02	0.0000E+00	2.6854E+07	-3.2312E+04	3.4327E+04	1.1464E+03	-2.2669E+03	2.1533E+03	8.5441E+05
1.6260E+02	1.2534E+03	3.5000E+00	-3.2312E+04	3.1686E+04	2.6975E+03	-2.2669E+03	1.8457E+03	8.4277E+05
1.6260E+02	1.2255E+03	1.2167E+01	-3.2312E+04	2.9046E+04	3.5522E+03	-2.2669E+03	1.5381E+03	6.8203E+05
1.6260E+02	1.1977E+03	5.2500E+00	-3.2312E+04	2.6405E+04	7.6505E+03	-2.2669E+03	1.2304E+03	8.2571E+05
1.6260E+02	1.1698E+03	5.2500E+00	-3.2312E+04	2.3765E+04	1.3004E+04	-2.2669E+03	9.2284E+02	8.8838E+05
1.6260E+02	1.1420E+03	1.7500E+00	-3.2312E+04	2.1124E+04	1.2474E+04	-2.2669E+03	6.1522E+02	1.5364E+06
1.6260E+02	1.1141E+03	7.0000E+00	-3.2312E+04	1.8484E+04	1.9745E+04	-2.2669E+03	3.0761E+02	4.2735E+06
1.6260E+02	1.0862E+03	1.7500E+00	-3.2312E+04	1.5843E+04	6.5774E+04	-2.2669E+03	0.0000E+00	7.2836E+06
1.6260E+02	1.0305E+03	1.7500E+00	-3.2312E+04	1.3203E+04	1.4998E+05	-2.6653E+03	1.3843E+04	5.6574E+01
1.6260E+02	9.1913E+02	2.9125E+00	-3.2312E+04	1.0562E+04	4.2829E+05	-2.6653E+03	1.3227E+04	1.0417E+00
1.6260E+02	8.9128E+02	1.7500E+00	-3.2312E+04	7.9215E+03	1.3031E+06	-2.6653E+03	1.2920E+04	8.6266E+02
1.6260E+02	8.3558E+02	4.1250E-01	-3.2312E+04	5.2810E+03	3.3701E+06	-2.6653E+03	1.2612E+04	9.7405E+01
1.6260E+02	7.7987E+02	1.2500E+00	-3.2312E+04	2.6405E+03	6.0083E+06	-2.6653E+03	1.2304E+04	2.1222E+02
1.6260E+02	6.9631E+02	1.5555E+01	-3.2312E+04	0.0000E+00	1.9426E+07	-2.6653E+03	1.1997E+04	9.7405E+01
1.6260E+02	6.6846E+02	9.6340E+00	-3.5106E+04	8.4496E+04	8.3335E+01	-2.6653E+03	1.1689E+04	1.1315E+02
1.6260E+02	6.4061E+02	6.2215E+00	-3.5106E+04	5.5451E+04	9.7405E+01	-2.6653E+03	1.1382E+04	1.0670E+03
1.6260E+02	6.1276E+02	3.1200E+01	-3.5106E+04	5.2810E+04	9.7405E+01	-2.6653E+03	1.1074E+04	6.4276E+02
1.6260E+02	5.8490E+02	2.6136E+01	-3.5106E+04	5.0170E+04	9.5881E+02	-2.6653E+03	1.0766E+04	5.6574E+01
1.6260E+02	5.5705E+02	7.9420E+01	-3.5106E+04	4.7529E+04	9.4644E+03	-2.6653E+03	1.0459E+04	5.6574E+01
1.6260E+02	5.2920E+02	4.9813E+02	-3.5106E+04	4.4889E+04	1.0440E+04	-2.6653E+03	1.0151E+04	5.0173E+02
1.6260E+02	5.0135E+02	3.9473E+02	-3.5106E+04	4.2248E+04	1.2663E+03	-2.6653E+03	9.8436E+03	2.7772E+02
1.6260E+02	4.7349E+02	3.5560E+03	-3.5106E+04	3.9608E+04	1.2726E+04	-2.6653E+03	9.5360E+03	3.0208E+03
1.6260E+02	4.4564E+02	4.7726E+02	-3.5106E+04	3.6967E+04	2.9407E+03	-2.6653E+03	9.2284E+03	1.4607E+03
1.6260E+02	4.1779E+02	1.1538E+03	-3.5106E+04	3.4327E+04	4.5779E+03	-2.6653E+03	8.9207E+03	1.5533E+03

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.6260E+02	3.8994E+02	8.5653E+02	-3.5106E+04	3.1686E+04	2.0865E+04	-2.6653E+03	8.6131E+03	6.4621E+02
1.6260E+02	3.6208E+02	3.5774E+04	-3.5106E+04	2.9046E+04	1.4867E+04	-2.6653E+03	8.3055E+03	6.3187E+02
1.6260E+02	3.3423E+02	2.3313E+04	-3.5106E+04	2.6405E+04	3.1331E+04	-2.6653E+03	7.9979E+03	1.4781E+03
1.6260E+02	3.0638E+02	1.2644E+04	-3.5106E+04	2.3765E+04	4.7073E+04	-2.6653E+03	7.6903E+03	1.0549E+03
1.6260E+02	2.7853E+02	3.6130E+04	-3.5106E+04	2.1124E+04	5.7183E+04	-2.6653E+03	7.3827E+03	5.1547E+03
1.6260E+02	2.5067E+02	2.3091E+04	-3.5106E+04	1.8484E+04	8.8729E+04	-2.6653E+03	7.0751E+03	2.1951E+03
1.6260E+02	2.2282E+02	3.4716E+04	-3.5106E+04	1.5843E+04	1.4096E+05	-2.6653E+03	6.7675E+03	9.7475E+03
1.6260E+02	1.9497E+02	1.4904E+05	-3.5106E+04	1.3203E+04	1.4325E+05	-2.6653E+03	6.4598E+03	6.7187E+03
1.6260E+02	1.6712E+02	5.0302E+05	-3.5106E+04	1.0562E+04	4.0497E+05	-2.6653E+03	6.1522E+03	3.1760E+04
1.6260E+02	1.3926E+02	9.1801E+05	-3.5106E+04	7.9215E+03	1.2513E+06	-2.6653E+03	5.8446E+03	2.7121E+04
1.6260E+02	1.1141E+02	1.9173E+06	-3.5106E+04	5.2810E+03	3.5268E+06	-2.6653E+03	5.5370E+03	4.1993E+04
1.6260E+02	8.3558E+01	2.6824E+06	-3.5106E+04	2.6405E+03	6.8241E+06	-2.6653E+03	5.2294E+03	3.4383E+04
1.6260E+02	5.5705E+01	2.2218E+06	-3.5106E+04	0.0000E+00	1.9724E+07	-2.6653E+03	4.9218E+03	6.9718E+04
1.6260E+02	2.7853E+01	1.3482E+07	-3.7900E+04	5.8091E+04	9.3670E+03	-2.6653E+03	4.6142E+03	1.0381E+05
1.6260E+02	0.0000E+00	3.2598E+07	-3.7900E+04	5.5451E+04	2.9247E+02	-2.6653E+03	4.3066E+03	1.5949E+05
1.3439E+02	1.3926E+03	1.7500E+00	-3.7900E+04	5.2810E+04	9.7405E+01	-2.6653E+03	3.9990E+03	1.6187E+05
1.3439E+02	1.3091E+03	1.7500E+00	-3.7900E+04	5.0170E+04	2.9247E+02	-2.6653E+03	3.6913E+03	2.8329E+05
1.3439E+02	1.2812E+03	3.5000E+00	-3.7900E+04	4.7529E+04	1.0326E+04	-2.6653E+03	3.3837E+03	3.5875E+05
1.3439E+02	1.2534E+03	5.2500E+00	-3.7900E+04	4.4889E+04	2.7296E+03	-2.6653E+03	3.0761E+03	4.3758E+05
1.3439E+02	1.2255E+03	5.2500E+00	-3.7900E+04	4.2248E+04	1.2665E+04	-2.6653E+03	2.7685E+03	4.9849E+05
1.3439E+02	1.1977E+03	5.2500E+00	-3.7900E+04	3.9608E+04	1.4169E+04	-2.6653E+03	2.4609E+03	5.8576E+05
1.3439E+02	1.1698E+03	7.0000E+00	-3.7900E+04	3.6967E+04	1.4045E+04	-2.6653E+03	2.1533E+03	5.6597E+05
1.3439E+02	1.1141E+03	1.7500E+00	-3.7900E+04	3.4327E+04	1.8656E+04	-2.6653E+03	1.8457E+03	6.1972E+05
1.3439E+02	1.0862E+03	3.5000E+00	-3.7900E+04	3.1686E+04	2.3005E+04	-2.6653E+03	1.5381E+03	7.2394E+05
1.3439E+02	1.0584E+03	1.7500E+00	-3.7900E+04	2.9046E+04	6.8867E+04	-2.6653E+03	1.2304E+03	7.2669E+05
1.3439E+02	1.0305E+03	1.7500E+00	-3.7900E+04	2.6405E+04	4.8459E+04	-2.6653E+03	9.2284E+02	7.1478E+05
1.3439E+02	9.7484E+02	1.2500E+00	-3.7900E+04	2.3765E+04	1.1936E+05	-2.6653E+03	6.1522E+02	1.1317E+06
1.3439E+02	9.1913E+02	1.7500E+00	-3.7900E+04	2.1124E+04	1.3623E+05	-2.6653E+03	3.0761E+02	2.7735E+06
1.3439E+02	8.6343E+02	1.7500E+00	-3.7900E+04	1.8484E+04	1.4197E+05	-2.6653E+03	0.0000E+00	5.4523E+06
1.3439E+02	6.9631E+02	6.6340E+00	-3.7900E+04	1.5843E+04	1.9113E+05	-3.0638E+03	1.5073E+04	2.8287E+01
1.3439E+02	6.4061E+02	6.6340E+00	-3.7900E+04	1.3203E+04	2.7326E+05	-3.0638E+03	1.2612E+04	5.6574E+01
1.3439E+02	6.1276E+02	1.9077E+01	-3.7900E+04	1.0562E+04	5.2237E+05	-3.0638E+03	1.2304E+04	2.7967E+02
1.3439E+02	5.8490E+02	6.9601E+01	-3.7900E+04	7.9215E+03	1.8969E+06	-3.0638E+03	1.1997E+04	8.4861E+01
1.3439E+02	5.5705E+02	5.7402E+01	-3.7900E+04	5.2810E+03	4.2599E+06	-3.0638E+03	1.1689E+04	1.0417E+00
1.3439E+02	5.2920E+02	4.2928E+01	-3.7900E+04	2.6405E+03	8.4248E+06	-3.0638E+03	1.1074E+04	1.8227E+02
1.3439E+02	5.0135E+02	1.1565E+02	-3.7900E+04	0.0000E+00	1.8159E+07	-3.0638E+03	1.0766E+04	8.5566E+01
1.3439E+02	4.7349E+02	3.4354E+03	-4.0694E+04	5.5451E+04	5.8494E+02	-3.0638E+03	1.0459E+04	2.6961E+01

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.3439E+02	4.4564E+02	1.3154E+02	-4.0694E+04	5.2810E+04	2.9247E+02	-3.0638E+03	1.0151E+04	4.1250E-01
1.3439E+02	4.1779E+02	1.2987E+02	-4.0694E+04	5.0170E+04	8.7741E+02	-3.0638E+03	9.8436E+03	8.7857E+01
1.3439E+02	3.8994E+02	1.1467E+03	-4.0694E+04	4.7529E+04	1.0049E+04	-3.0638E+03	9.5360E+03	2.9663E+02
1.3439E+02	3.6208E+02	4.9047E+03	-4.0694E+04	4.4889E+04	1.4463E+03	-3.0638E+03	9.2284E+03	3.6156E+02
1.3439E+02	3.3423E+02	7.5180E+03	-4.0694E+04	4.2248E+04	5.2663E+03	-3.0638E+03	8.9207E+03	2.5572E+02
1.3439E+02	3.0638E+02	2.6007E+04	-4.0694E+04	3.9608E+04	2.5188E+03	-3.0638E+03	8.6131E+03	1.0055E+03
1.3439E+02	2.7853E+02	5.6160E+04	-4.0694E+04	3.6967E+04	9.7190E+03	-3.0638E+03	8.3055E+03	4.3735E+02
1.3439E+02	2.5067E+02	9.3584E+04	-4.0694E+04	3.4327E+04	2.7686E+04	-3.0638E+03	7.9979E+03	1.3237E+03
1.3439E+02	2.2282E+02	1.6125E+05	-4.0694E+04	3.1686E+04	6.8101E+03	-3.0638E+03	7.6903E+03	2.4593E+03
1.3439E+02	1.9497E+02	3.6182E+05	-4.0694E+04	2.9046E+04	4.1784E+04	-3.0638E+03	7.3827E+03	7.3255E+02
1.3439E+02	1.6712E+02	7.7565E+05	-4.0694E+04	2.6405E+04	5.3420E+04	-3.0638E+03	7.0751E+03	1.5145E+03
1.3439E+02	1.3926E+02	1.5502E+06	-4.0694E+04	2.3765E+04	5.7090E+04	-3.0638E+03	6.7675E+03	4.1654E+03
1.3439E+02	1.1141E+02	2.3526E+06	-4.0694E+04	2.1124E+04	9.7320E+04	-3.0638E+03	6.4598E+03	6.4510E+03
1.3439E+02	8.3558E+01	2.4194E+06	-4.0694E+04	1.8484E+04	1.7910E+05	-3.0638E+03	6.1522E+03	9.6049E+03
1.3439E+02	5.5705E+01	2.0207E+06	-4.0694E+04	1.5843E+04	2.1562E+05	-3.0638E+03	5.8446E+03	1.4595E+04
1.3439E+02	2.7853E+01	1.1857E+07	-4.0694E+04	1.3203E+04	3.6137E+05	-3.0638E+03	5.5370E+03	1.2035E+04
1.3439E+02	0.0000E+00	3.1882E+07	-4.0694E+04	1.0562E+04	7.7170E+05	-3.0638E+03	5.2294E+03	3.0751E+04
1.0618E+02	1.3091E+03	3.5000E+00	-4.0694E+04	7.9215E+03	2.0381E+06	-3.0638E+03	4.9218E+03	3.3436E+04
1.0618E+02	1.2812E+03	1.7500E+00	-4.0694E+04	5.2810E+03	5.8169E+06	-3.0638E+03	4.6142E+03	6.7263E+04
1.0618E+02	1.2534E+03	1.7500E+00	-4.0694E+04	2.6405E+03	1.1441E+07	-3.0638E+03	4.3066E+03	4.6523E+04
1.0618E+02	1.2255E+03	3.5000E+00	-4.0694E+04	0.0000E+00	2.2617E+07	-3.0638E+03	3.9990E+03	1.2935E+05
1.0618E+02	1.1977E+03	7.0000E+00	-4.3489E+04	5.5451E+04	5.8494E+02	-3.0638E+03	3.6913E+03	1.2194E+05
1.0618E+02	1.1698E+03	3.5000E+00	-4.3489E+04	4.7529E+04	7.6400E+02	-3.0638E+03	3.3837E+03	1.6981E+05
1.0618E+02	1.1141E+03	1.7500E+00	-4.3489E+04	4.4889E+04	9.6595E+03	-3.0638E+03	3.0761E+03	2.0759E+05
1.0618E+02	1.0305E+03	1.7500E+00	-4.3489E+04	4.2248E+04	3.2584E+03	-3.0638E+03	2.7685E+03	3.1604E+05
1.0618E+02	9.1913E+02	1.7500E+00	-4.3489E+04	3.9608E+04	1.9368E+04	-3.0638E+03	2.4609E+03	4.8923E+05
1.0618E+02	8.6343E+02	4.1250E-01	-4.3489E+04	3.6967E+04	1.2181E+04	-3.0638E+03	2.1533E+03	4.6329E+05
1.0618E+02	7.7987E+02	1.2500E+00	-4.3489E+04	3.4327E+04	1.3289E+04	-3.0638E+03	1.8457E+03	4.0461E+05
1.0618E+02	6.1276E+02	6.2215E+00	-4.3489E+04	3.1686E+04	1.9394E+04	-3.0638E+03	1.5381E+03	3.9890E+05
1.0618E+02	5.5705E+02	5.0768E+01	-4.3489E+04	2.9046E+04	3.5284E+04	-3.0638E+03	1.2304E+03	3.7127E+05
1.0618E+02	5.2920E+02	9.7460E+00	-4.3489E+04	2.6405E+04	7.2833E+04	-3.0638E+03	9.2284E+02	5.8451E+05
1.0618E+02	5.0135E+02	4.7996E+01	-4.3489E+04	2.3765E+04	6.5543E+04	-3.0638E+03	6.1522E+02	7.7734E+05
1.0618E+02	4.7349E+02	2.4488E+01	-4.3489E+04	2.1124E+04	9.5096E+04	-3.0638E+03	3.0761E+02	2.1761E+06
1.0618E+02	4.4564E+02	3.5675E+03	-4.3489E+04	1.8484E+04	1.5507E+05	-3.0638E+03	0.0000E+00	3.7701E+06
1.0618E+02	4.1779E+02	1.8795E+02	-4.3489E+04	1.5843E+04	2.2530E+05	-3.4623E+03	1.2304E+04	2.8287E+01
1.0618E+02	3.8994E+02	5.2336E+03	-4.3489E+04	1.3203E+04	4.0638E+05	-3.4623E+03	1.1997E+04	1.6625E+00
1.0618E+02	3.6208E+02	2.5193E+03	-4.3489E+04	1.0562E+04	9.3214E+05	-3.4623E+03	1.1382E+04	6.2215E+00

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
1.0618E+02	3.3423E+02	3.4111E+02	-4.3489E+04	7.9215E+03	2.7612E+06	-3.4623E+03	1.1074E+04	1.1773E+02
1.0618E+02	3.0638E+02	2.1630E+03	-4.3489E+04	5.2810E+03	6.1841E+06	-3.4623E+03	1.0766E+04	2.0518E+02
1.0618E+02	2.7853E+02	7.5432E+03	-4.3489E+04	2.6405E+03	1.3524E+07	-3.4623E+03	1.0459E+04	9.7817E+01
1.0618E+02	2.5067E+02	4.6338E+04	-4.3489E+04	0.0000E+00	2.1584E+07	-3.4623E+03	1.0151E+04	6.2215E+00
1.0618E+02	2.2282E+02	3.7233E+04	-4.6283E+04	7.1294E+04	7.6400E+02	-3.4623E+03	9.8436E+03	1.8868E+02
1.0618E+02	1.9497E+02	2.1023E+05	-4.6283E+04	6.8653E+04	7.6400E+02	-3.4623E+03	9.5360E+03	5.5334E+02
1.0618E+02	1.6712E+02	4.5772E+05	-4.6283E+04	5.5451E+04	7.6400E+02	-3.4623E+03	9.2284E+03	8.3122E+01
1.0618E+02	1.3926E+02	8.1901E+05	-4.6283E+04	5.2810E+04	4.9101E+03	-3.4623E+03	8.9207E+03	1.9914E+01
1.0618E+02	1.1141E+02	1.3553E+06	-4.6283E+04	5.0170E+04	2.4944E+03	-3.4623E+03	8.6131E+03	4.9771E+02
1.0618E+02	8.3558E+01	1.5085E+06	-4.6283E+04	4.7529E+04	1.7554E+04	-3.4623E+03	8.3055E+03	1.0548E+02
1.0618E+02	5.5705E+01	1.0246E+06	-4.6283E+04	4.4889E+04	6.8094E+03	-3.4623E+03	7.9979E+03	1.6519E+03
1.0618E+02	2.7853E+01	8.0291E+06	-4.6283E+04	4.2248E+04	1.7053E+04	-3.4623E+03	7.6903E+03	3.9641E+02
1.0618E+02	0.0000E+00	2.4425E+07	-4.6283E+04	3.9608E+04	3.2584E+03	-3.4623E+03	7.3827E+03	5.7429E+02
7.7970E+01	1.1977E+03	1.7500E+00	-4.6283E+04	3.6967E+04	7.2809E+03	-3.4623E+03	7.0751E+03	5.2245E+02
7.7970E+01	1.1698E+03	1.7500E+00	-4.6283E+04	3.4327E+04	1.7687E+04	-3.4623E+03	6.7675E+03	4.6821E+03
7.7970E+01	1.0862E+03	1.7500E+00	-4.6283E+04	3.1686E+04	1.9597E+04	-3.4623E+03	6.4598E+03	2.9020E+03
7.7970E+01	1.0584E+03	3.5000E+00	-4.6283E+04	2.9046E+04	2.8092E+04	-3.4623E+03	6.1522E+03	5.1283E+03
7.7970E+01	5.8490E+02	4.1250E-01	-4.6283E+04	2.6405E+04	3.1171E+04	-3.4623E+03	5.8446E+03	3.0932E+03
7.7970E+01	5.5705E+02	3.5138E+01	-4.6283E+04	2.3765E+04	1.0122E+05	-3.4623E+03	5.5370E+03	1.7515E+04
7.7970E+01	5.2920E+02	4.1250E-01	-4.6283E+04	2.1124E+04	9.9328E+04	-3.4623E+03	5.2294E+03	3.3949E+04
7.7970E+01	5.0135E+02	1.2375E+00	-4.6283E+04	1.8484E+04	1.7163E+05	-3.4623E+03	4.9218E+03	2.0422E+04
7.7970E+01	4.7349E+02	4.1237E+01	-4.6283E+04	1.5843E+04	2.6100E+05	-3.4623E+03	4.6142E+03	4.1349E+04
7.7970E+01	4.4564E+02	1.3457E+02	-4.6283E+04	1.3203E+04	4.3397E+05	-3.4623E+03	4.3066E+03	1.8067E+04
7.7970E+01	4.1779E+02	3.7713E+03	-4.6283E+04	1.0562E+04	8.9015E+05	-3.4623E+03	3.9990E+03	4.4730E+04
7.7970E+01	3.8994E+02	4.9304E+03	-4.6283E+04	7.9215E+03	2.4999E+06	-3.4623E+03	3.6913E+03	5.9832E+04
7.7970E+01	3.6208E+02	1.9923E+03	-4.6283E+04	5.2810E+03	6.5702E+06	-3.4623E+03	3.3837E+03	8.8018E+04
7.7970E+01	3.3423E+02	2.4128E+03	-4.6283E+04	2.6405E+03	1.3453E+07	-3.4623E+03	3.0761E+03	1.0244E+05
7.7970E+01	3.0638E+02	6.8525E+03	-4.6283E+04	0.0000E+00	2.1132E+07	-3.4623E+03	2.7685E+03	1.8073E+05
7.7970E+01	2.7853E+02	3.2393E+03	-4.9077E+04	5.5451E+04	3.3821E+03	-3.4623E+03	2.4609E+03	1.2495E+05
7.7970E+01	2.5067E+02	1.1924E+04	-4.9077E+04	5.2810E+04	2.4944E+03	-3.4623E+03	2.1533E+03	1.4517E+05
7.7970E+01	2.2282E+02	4.0307E+04	-4.9077E+04	5.0170E+04	3.4609E+03	-3.4623E+03	1.8457E+03	1.7303E+05
7.7970E+01	1.9497E+02	5.6957E+04	-4.9077E+04	4.7529E+04	1.5699E+04	-3.4623E+03	1.5381E+03	1.4426E+05
7.7970E+01	1.6712E+02	3.0706E+05	-4.9077E+04	4.4889E+04	1.3002E+04	-3.4623E+03	1.2304E+03	2.2288E+05
7.7970E+01	1.3926E+02	4.4796E+05	-4.9077E+04	4.2248E+04	1.3204E+04	-3.4623E+03	9.2284E+02	2.7012E+05
7.7970E+01	1.1141E+02	7.1844E+05	-4.9077E+04	3.9608E+04	8.9447E+03	-3.4623E+03	6.1522E+02	4.9345E+05
7.7970E+01	8.3558E+01	1.0150E+06	-4.9077E+04	3.6967E+04	1.3844E+04	-3.4623E+03	3.0761E+02	1.1631E+06
7.7970E+01	5.5705E+01	7.4740E+05	-4.9077E+04	3.4327E+04	1.8675E+04	-3.4623E+03	0.0000E+00	2.6969E+06

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
7.7970E+01	2.7853E+01	5.2998E+06	-4.9077E+04	3.1686E+04	8.3710E+03	-3.8608E+03	1.1689E+04	6.2215E+00
7.7970E+01	0.0000E+00	1.7391E+07	-4.9077E+04	2.9046E+04	2.5565E+04	-3.8608E+03	1.1382E+04	2.5000E+00
4.9761E+01	6.9631E+02	1.2500E+00	-4.9077E+04	2.6405E+04	5.2575E+04	-3.8608E+03	1.1074E+04	8.2965E+00
4.9761E+01	5.5705E+02	3.7500E+01	-4.9077E+04	2.3765E+04	6.1835E+04	-3.8608E+03	1.0766E+04	2.7042E+00
4.9761E+01	5.2920E+02	4.1250E-01	-4.9077E+04	2.1124E+04	8.4334E+04	-3.8608E+03	1.0459E+04	9.7817E+01
4.9761E+01	5.0135E+02	9.2662E+01	-4.9077E+04	1.8484E+04	1.4208E+05	-3.8608E+03	1.0151E+04	2.9537E+01
4.9761E+01	4.7349E+02	6.7329E+01	-4.9077E+04	1.5843E+04	1.9421E+05	-3.8608E+03	9.8436E+03	2.0327E+01
4.9761E+01	4.4564E+02	5.1962E+01	-4.9077E+04	1.3203E+04	3.5299E+05	-3.8608E+03	9.5360E+03	8.7215E+00
4.9761E+01	4.1779E+02	2.2383E+03	-4.9077E+04	1.0562E+04	7.3498E+05	-3.8608E+03	8.9207E+03	1.7636E+02
4.9761E+01	3.8994E+02	2.5707E+03	-4.9077E+04	7.9215E+03	2.9719E+06	-3.8608E+03	8.6131E+03	1.1622E+01
4.9761E+01	3.6208E+02	7.8713E+03	-4.9077E+04	5.2810E+03	5.9028E+06	-3.8608E+03	8.3055E+03	3.2284E+02
4.9761E+01	3.3423E+02	4.4653E+03	-4.9077E+04	2.6405E+03	1.4033E+07	-3.8608E+03	7.9979E+03	3.1933E+01
4.9761E+01	3.0638E+02	5.1987E+03	-4.9077E+04	0.0000E+00	1.9574E+07	-3.8608E+03	7.6903E+03	5.9074E+01
4.9761E+01	2.7853E+02	1.3441E+04	-5.1871E+04	5.8091E+04	3.4609E+03	-3.8608E+03	7.3827E+03	2.7793E+02
4.9761E+01	2.5067E+02	2.5816E+04	-5.1871E+04	5.5451E+04	7.6400E+02	-3.8608E+03	7.0751E+03	6.8538E+02
4.9761E+01	2.2282E+02	3.1891E+04	-5.1871E+04	4.7529E+04	1.6023E+04	-3.8608E+03	6.7675E+03	1.0205E+03
4.9761E+01	1.9497E+02	3.6519E+04	-5.1871E+04	4.4889E+04	3.4609E+03	-3.8608E+03	6.4598E+03	2.8098E+03
4.9761E+01	1.6712E+02	1.4866E+05	-5.1871E+04	4.2248E+04	2.0608E+04	-3.8608E+03	6.1522E+03	5.7431E+02
4.9761E+01	1.3926E+02	2.3949E+05	-5.1871E+04	3.9608E+04	2.0450E+04	-3.8608E+03	5.8446E+03	5.7315E+03
4.9761E+01	1.1141E+02	4.4083E+05	-5.1871E+04	3.6967E+04	3.3497E+04	-3.8608E+03	5.5370E+03	7.8070E+03
4.9761E+01	8.3558E+01	6.2570E+05	-5.1871E+04	3.4327E+04	2.3754E+04	-3.8608E+03	5.2294E+03	4.7739E+03
4.9761E+01	5.5705E+01	4.7736E+05	-5.1871E+04	3.1686E+04	2.8384E+04	-3.8608E+03	4.9218E+03	1.3906E+04
4.9761E+01	2.7853E+01	2.9067E+06	-5.1871E+04	2.9046E+04	4.8105E+04	-3.8608E+03	4.6142E+03	2.7477E+04
4.9761E+01	0.0000E+00	1.2531E+07	-5.1871E+04	2.6405E+04	4.2647E+04	-3.8608E+03	4.3066E+03	2.3389E+04
2.1552E+01	5.8490E+02	5.6333E+01	-5.1871E+04	2.3765E+04	6.1123E+04	-3.8608E+03	3.9990E+03	1.4123E+04
2.1552E+01	5.5705E+02	1.2500E+00	-5.1871E+04	2.1124E+04	6.9721E+04	-3.8608E+03	3.6913E+03	2.9821E+04
2.1552E+01	5.2920E+02	4.1667E+01	-5.1871E+04	1.8484E+04	1.0930E+05	-3.8608E+03	3.3837E+03	5.1118E+04
2.1552E+01	4.7349E+02	5.9658E+01	-5.1871E+04	1.5843E+04	1.5442E+05	-3.8608E+03	3.0761E+03	4.8756E+04
2.1552E+01	4.4564E+02	4.3737E+01	-5.1871E+04	1.3203E+04	2.8055E+05	-3.8608E+03	2.7685E+03	5.1889E+04
2.1552E+01	4.1779E+02	2.0150E+01	-5.1871E+04	1.0562E+04	1.0642E+06	-3.8608E+03	2.4609E+03	5.7638E+04
2.1552E+01	3.8994E+02	6.1409E+01	-5.1871E+04	7.9215E+03	2.5346E+06	-3.8608E+03	2.1533E+03	7.4099E+04
2.1552E+01	3.6208E+02	4.2660E+03	-5.1871E+04	5.2810E+03	6.2221E+06	-3.8608E+03	1.8457E+03	8.0347E+04
2.1552E+01	3.3423E+02	6.4316E+03	-5.1871E+04	2.6405E+03	1.4774E+07	-3.8608E+03	1.5381E+03	7.1985E+04
2.1552E+01	3.0638E+02	5.9654E+03	-5.1871E+04	0.0000E+00	2.0018E+07	-3.8608E+03	1.2304E+03	8.9196E+04
2.1552E+01	2.7853E+02	3.9231E+04	-5.4665E+04	5.5451E+04	1.7304E+03	-3.8608E+03	9.2284E+02	1.1657E+05
2.1552E+01	2.5067E+02	5.8733E+04	-5.4665E+04	5.2810E+04	6.7642E+03	-3.8608E+03	6.1522E+02	2.4917E+05
2.1552E+01	2.2282E+02	7.2268E+04	-5.4665E+04	5.0170E+04	4.1461E+03	-3.8608E+03	3.0761E+02	7.0669E+05

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
2.1552E+01	1.9497E+02	1.2124E+05	-5.4665E+04	4.7529E+04	6.7642E+03	-3.8608E+03	0.0000E+00	1.6185E+06
2.1552E+01	1.6712E+02	2.0280E+05	-5.4665E+04	4.4889E+04	2.7057E+04	-4.2592E+03	1.1382E+04	2.5000E+00
2.1552E+01	1.3926E+02	3.1213E+05	-5.4665E+04	4.2248E+04	3.1285E+04	-4.2592E+03	1.0766E+04	1.6625E+00
2.1552E+01	1.1141E+02	3.4958E+05	-5.4665E+04	3.9608E+04	6.4624E+04	-4.2592E+03	9.8436E+03	5.6574E+01
2.1552E+01	8.3558E+01	4.2088E+05	-5.4665E+04	3.6967E+04	4.6209E+04	-4.2592E+03	9.5360E+03	1.3693E+01
2.1552E+01	5.5705E+01	5.1369E+05	-5.4665E+04	3.4327E+04	6.5955E+04	-4.2592E+03	9.2284E+03	5.6574E+01
2.1552E+01	2.7853E+01	1.9263E+06	-5.4665E+04	3.1686E+04	4.2394E+04	-4.2592E+03	8.6131E+03	1.5041E+02
2.1552E+01	0.0000E+00	2.3904E+07	-5.4665E+04	2.9046E+04	5.4205E+04	-4.2592E+03	7.6903E+03	6.2820E+01
-6.6569E+00	6.1276E+02	4.1250E-01	-5.4665E+04	2.6405E+04	7.5331E+04	-4.2592E+03	7.3827E+03	4.6532E+02
-6.6569E+00	5.2920E+02	1.2500E+00	-5.4665E+04	2.3765E+04	8.2565E+04	-4.2592E+03	7.0751E+03	1.9731E+02
-6.6569E+00	5.0135E+02	1.7500E+00	-5.4665E+04	2.1124E+04	3.8405E+04	-4.2592E+03	6.7675E+03	3.1494E+02
-6.6569E+00	4.7349E+02	4.2500E+00	-5.4665E+04	1.8484E+04	1.0318E+05	-4.2592E+03	6.4598E+03	9.2918E+02
-6.6569E+00	4.4564E+02	4.4167E+01	-5.4665E+04	1.5843E+04	9.4502E+04	-4.2592E+03	6.1522E+03	5.6882E+02
-6.6569E+00	3.8994E+02	1.8107E+02	-5.4665E+04	1.3203E+04	2.8675E+05	-4.2592E+03	5.8446E+03	1.1017E+03
-6.6569E+00	3.6208E+02	6.5000E+00	-5.4665E+04	1.0562E+04	9.1814E+05	-4.2592E+03	5.5370E+03	3.2238E+03
-6.6569E+00	3.3423E+02	1.4000E+01	-5.4665E+04	7.9215E+03	2.6294E+06	-4.2592E+03	5.2294E+03	3.1872E+03
-6.6569E+00	3.0638E+02	8.7734E+01	-5.4665E+04	5.2810E+03	6.6586E+06	-4.2592E+03	4.9218E+03	1.1014E+03
-6.6569E+00	2.7853E+02	9.7454E+03	-5.4665E+04	2.6405E+03	1.6382E+07	-4.2592E+03	4.6142E+03	7.5808E+03
-6.6569E+00	2.5067E+02	2.2203E+04	-5.4665E+04	0.0000E+00	2.2558E+07	-4.2592E+03	4.3066E+03	1.1810E+04
-6.6569E+00	2.2282E+02	1.3524E+04	-5.7459E+04	5.0170E+04	5.1125E+03	-4.2592E+03	3.9990E+03	5.4712E+03
-6.6569E+00	1.9497E+02	1.3204E+04	-5.7459E+04	4.7529E+04	1.6911E+04	-4.2592E+03	3.6913E+03	9.2452E+03
-6.6569E+00	1.6712E+02	7.6591E+04	-5.7459E+04	4.2248E+04	2.1541E+04	-4.2592E+03	3.3837E+03	1.5936E+04
-6.6569E+00	1.3926E+02	1.3004E+05	-5.7459E+04	3.9608E+04	2.7684E+04	-4.2592E+03	3.0761E+03	2.0633E+04
-6.6569E+00	1.1141E+02	2.6540E+05	-5.7459E+04	3.6967E+04	2.4861E+04	-4.2592E+03	2.7685E+03	9.1160E+03
-6.6569E+00	8.3558E+01	1.0155E+06	-5.7459E+04	3.4327E+04	2.8239E+04	-4.2592E+03	2.4609E+03	1.3979E+04
-6.6569E+00	5.5705E+01	2.9985E+06	-5.7459E+04	3.1686E+04	8.1752E+04	-4.2592E+03	2.1533E+03	1.6945E+04
-6.6569E+00	2.7853E+01	4.9534E+06	-5.7459E+04	2.9046E+04	9.1844E+04	-4.2592E+03	1.8457E+03	3.1999E+04
-6.6569E+00	0.0000E+00	4.1424E+07	-5.7459E+04	2.6405E+04	5.8033E+04	-4.2592E+03	1.5381E+03	3.0183E+04
-3.4866E+01	5.2920E+02	4.3329E+01	-5.7459E+04	2.3765E+04	1.6132E+05	-4.2592E+03	1.2304E+03	2.7473E+04
-3.4866E+01	4.7349E+02	4.2917E+01	-5.7459E+04	2.1124E+04	1.8102E+05	-4.2592E+03	9.2284E+02	2.6640E+04
-3.4866E+01	4.4564E+02	4.1250E-01	-5.7459E+04	1.8484E+04	1.3182E+05	-4.2592E+03	6.1522E+02	8.0911E+04
-3.4866E+01	4.1779E+02	3.5000E+00	-5.7459E+04	1.5843E+04	2.6758E+05	-4.2592E+03	3.0761E+02	3.2466E+05
-3.4866E+01	3.8994E+02	7.0000E+00	-5.7459E+04	1.3203E+04	6.8031E+05	-4.2592E+03	0.0000E+00	7.1137E+05
-3.4866E+01	3.6208E+02	3.0667E+01	-5.7459E+04	1.0562E+04	1.2574E+06	-4.6577E+03	8.3055E+03	1.9563E+02
-3.4866E+01	3.3423E+02	1.2000E+01	-5.7459E+04	7.9215E+03	3.6739E+06	-4.6577E+03	7.0751E+03	1.2443E+01
-3.4866E+01	3.0638E+02	1.4000E+01	-5.7459E+04	5.2810E+03	9.0682E+06	-4.6577E+03	6.7675E+03	1.2443E+01
-3.4866E+01	2.7853E+02	5.3917E+01	-5.7459E+04	2.6405E+03	2.2017E+07	-4.6577E+03	6.4598E+03	1.6606E+01

Markov Matrices								
Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-3.4866E+01	2.5067E+02	7.1167E+01	-5.7459E+04	0.0000E+00	3.0176E+07	-4.6577E+03	6.1522E+03	2.6969E+01
-3.4866E+01	2.2282E+02	1.9157E+02	-6.0253E+04	4.2248E+04	8.3335E-02	-4.6577E+03	5.8446E+03	1.3886E+02
-3.4866E+01	1.9497E+02	3.5182E+03	-6.0253E+04	3.9608E+04	5.6613E+03	-4.6577E+03	5.5370E+03	9.7228E+01
-3.4866E+01	1.6712E+02	5.5746E+03	-6.0253E+04	3.6967E+04	1.7072E+04	-4.6577E+03	5.2294E+03	9.4267E+02
-3.4866E+01	1.3926E+02	2.2003E+04	-6.0253E+04	3.4327E+04	2.9414E+04	-4.6577E+03	4.9218E+03	2.4860E+03
-3.4866E+01	1.1141E+02	4.1474E+04	-6.0253E+04	3.1686E+04	7.9264E+04	-4.6577E+03	4.6142E+03	2.5041E+02
-3.4866E+01	8.3558E+01	5.5016E+04	-6.0253E+04	2.9046E+04	4.7517E+04	-4.6577E+03	4.3066E+03	1.5815E+03
-3.4866E+01	5.5705E+01	4.3533E+04	-6.0253E+04	2.6405E+04	1.7907E+05	-4.6577E+03	3.9990E+03	4.7793E+03
-3.4866E+01	2.7853E+01	2.1108E+05	-6.0253E+04	2.3765E+04	2.5316E+05	-4.6577E+03	3.6913E+03	1.8524E+03
-3.4866E+01	0.0000E+00	5.4334E+06	-6.0253E+04	2.1124E+04	2.8214E+05	-4.6577E+03	3.3837E+03	1.0048E+04
-6.3075E+01	5.8490E+02	1.2500E+00	-6.0253E+04	1.8484E+04	5.8368E+05	-4.6577E+03	3.0761E+03	1.1735E+04
-6.3075E+01	4.7349E+02	1.7500E+00	-6.0253E+04	1.5843E+04	9.6844E+05	-4.6577E+03	2.7685E+03	1.0040E+04
-6.3075E+01	3.8994E+02	7.0000E+00	-6.0253E+04	1.3203E+04	1.2652E+06	-4.6577E+03	2.4609E+03	6.0191E+03
-6.3075E+01	3.6208E+02	8.7500E+00	-6.0253E+04	1.0562E+04	2.5816E+06	-4.6577E+03	2.1533E+03	3.0671E+04
-6.3075E+01	3.3423E+02	1.7500E+00	-6.0253E+04	7.9215E+03	4.8939E+06	-4.6577E+03	1.8457E+03	1.6757E+04
-6.3075E+01	3.0638E+02	1.9250E+01	-6.0253E+04	5.2810E+03	1.2893E+07	-4.6577E+03	1.5381E+03	1.9681E+04
-6.3075E+01	2.7853E+02	2.9750E+01	-6.0253E+04	2.6405E+03	3.0652E+07	-4.6577E+03	1.2304E+03	1.1022E+04
-6.3075E+01	2.5067E+02	1.2208E+02	-6.0253E+04	0.0000E+00	3.8941E+07	-4.6577E+03	9.2284E+02	4.5720E+04
-6.3075E+01	2.2282E+02	1.3483E+02	-6.3047E+04	3.9608E+04	1.1322E+04	-4.6577E+03	6.1522E+02	3.5684E+04
-6.3075E+01	1.9497E+02	3.8600E+02	-6.3047E+04	3.6967E+04	5.6612E+03	-4.6577E+03	3.0761E+02	1.7985E+05
-6.3075E+01	1.6712E+02	2.7464E+03	-6.3047E+04	3.4327E+04	5.6613E+03	-4.6577E+03	0.0000E+00	3.6461E+05
-6.3075E+01	1.3926E+02	2.7023E+02	-6.3047E+04	3.1686E+04	5.6662E+03	-5.0562E+03	1.3535E+04	1.6625E+00
-6.3075E+01	1.1141E+02	1.1121E+04	-6.3047E+04	2.9046E+04	3.1688E+04	-5.0562E+03	8.3055E+03	2.8287E+01
-6.3075E+01	8.3558E+01	2.4985E+04	-6.3047E+04	2.6405E+04	4.2081E+04	-5.0562E+03	7.9979E+03	1.6625E+00
-6.3075E+01	5.5705E+01	8.8430E+03	-6.3047E+04	2.3765E+04	1.0102E+05	-5.0562E+03	7.6903E+03	2.5000E+00
-6.3075E+01	2.7853E+01	6.5685E+04	-6.3047E+04	2.1124E+04	2.7123E+05	-5.0562E+03	7.0751E+03	5.6574E+01
-6.3075E+01	0.0000E+00	1.0590E+06	-6.3047E+04	1.8484E+04	3.7676E+05	-5.0562E+03	6.4598E+03	3.8737E+01
-9.1284E+01	5.8490E+02	3.5000E+00	-6.3047E+04	1.5843E+04	9.2760E+05	-5.0562E+03	6.1522E+03	5.9074E+01
-9.1284E+01	5.5705E+02	1.7500E+00	-6.3047E+04	1.3203E+04	1.6251E+06	-5.0562E+03	5.5370E+03	5.6574E+01
-9.1284E+01	4.4564E+02	1.7500E+00	-6.3047E+04	1.0562E+04	2.9306E+06	-5.0562E+03	5.2294E+03	3.7698E+02
-9.1284E+01	3.3423E+02	7.0000E+00	-6.3047E+04	7.9215E+03	5.6228E+06	-5.0562E+03	4.9218E+03	2.1295E+02
-9.1284E+01	3.0638E+02	3.7500E+01	-6.3047E+04	5.2810E+03	1.2671E+07	-5.0562E+03	4.6142E+03	1.0765E+03
-9.1284E+01	2.7853E+02	1.0500E+01	-6.3047E+04	2.6405E+03	3.0835E+07	-5.0562E+03	4.3066E+03	3.2020E+02
-9.1284E+01	2.5067E+02	7.3417E+01	-6.3047E+04	0.0000E+00	3.8507E+07	-5.0562E+03	3.9990E+03	2.7143E+03
-9.1284E+01	2.2282E+02	3.5000E+00	-6.5841E+04	2.9046E+04	9.0448E+03	-5.0562E+03	3.6913E+03	3.6017E+03
-9.1284E+01	1.9497E+02	9.1158E+01	-6.5841E+04	2.3765E+04	1.4706E+04	-5.0562E+03	3.3837E+03	2.2920E+03
-9.1284E+01	1.6712E+02	9.7658E+01	-6.5841E+04	2.1124E+04	1.1322E+04	-5.0562E+03	3.0761E+03	8.2100E+03

Markov Matrices

Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-9.1284E+01	1.3926E+02	1.1325E+01	-6.5841E+04	1.8484E+04	5.9209E+04	-5.0562E+03	2.7685E+03	5.1014E+03
-9.1284E+01	1.1141E+02	2.2699E+02	-6.5841E+04	1.5843E+04	1.9560E+05	-5.0562E+03	2.4609E+03	6.0602E+03
-9.1284E+01	8.3558E+01	4.9031E+02	-6.5841E+04	1.3203E+04	7.1957E+05	-5.0562E+03	2.1533E+03	7.1304E+03
-9.1284E+01	5.5705E+01	7.5281E+02	-6.5841E+04	1.0562E+04	9.9046E+05	-5.0562E+03	1.8457E+03	4.4353E+03
-9.1284E+01	2.7853E+01	3.3892E+04	-6.5841E+04	7.9215E+03	2.5402E+06	-5.0562E+03	1.5381E+03	5.1827E+03
-9.1284E+01	0.0000E+00	2.7905E+05	-6.5841E+04	5.2810E+03	7.2040E+06	-5.0562E+03	1.2304E+03	6.0707E+03
-1.1949E+02	6.1276E+02	5.2500E+00	-6.5841E+04	2.6405E+03	1.9273E+07	-5.0562E+03	9.2284E+02	1.6056E+04
-1.1949E+02	5.8490E+02	1.7500E+00	-6.5841E+04	0.0000E+00	2.5397E+07	-5.0562E+03	6.1522E+02	1.2827E+04
-1.1949E+02	5.5705E+02	1.7500E+00	-6.8636E+04	1.8484E+04	5.6662E+03	-5.0562E+03	3.0761E+02	6.7157E+04
-1.1949E+02	5.0135E+02	1.7500E+00	-6.8636E+04	1.5843E+04	2.7350E+04	-5.0562E+03	0.0000E+00	1.8058E+05
-1.1949E+02	4.1779E+02	1.7500E+00	-6.8636E+04	1.3203E+04	3.8912E+04	-5.4547E+03	1.3227E+04	1.6625E+00
-1.1949E+02	3.6208E+02	1.7500E+00	-6.8636E+04	1.0562E+04	1.7215E+05	-5.4547E+03	7.0751E+03	8.2500E-01
-1.1949E+02	2.7853E+02	7.0000E+00	-6.8636E+04	7.9215E+03	8.2073E+05	-5.4547E+03	6.1522E+03	5.6574E+01
-1.1949E+02	2.5067E+02	3.5000E+00	-6.8636E+04	5.2810E+03	2.1923E+06	-5.4547E+03	5.8446E+03	1.5280E+03
-1.1949E+02	2.2282E+02	3.5000E+00	-6.8636E+04	2.6405E+03	7.2688E+06	-5.4547E+03	4.9218E+03	1.5995E+03
-1.1949E+02	1.9497E+02	3.5000E+00	-6.8636E+04	0.0000E+00	9.4653E+06	-5.4547E+03	4.6142E+03	1.1606E+02
-1.1949E+02	1.6712E+02	3.5000E+00	-7.1430E+04	1.3203E+04	1.7500E+00	-5.4547E+03	4.3066E+03	3.1296E+02
-1.1949E+02	1.3926E+02	9.9750E+01	-7.1430E+04	1.0562E+04	6.7677E+03	-5.4547E+03	3.9990E+03	2.6383E+02
-1.1949E+02	1.1141E+02	1.3849E+02	-7.1430E+04	7.9215E+03	1.1133E+05	-5.4547E+03	3.6913E+03	6.6640E+02
-1.1949E+02	8.3558E+01	1.1967E+02	-7.1430E+04	5.2810E+03	3.6184E+05	-5.4547E+03	3.3837E+03	9.5780E+02
-1.1949E+02	5.5705E+01	2.9782E+02	-7.1430E+04	2.6405E+03	1.6074E+06	-5.4547E+03	3.0761E+03	1.1356E+02
-1.1949E+02	2.7853E+01	2.1384E+03	-7.1430E+04	0.0000E+00	2.6722E+06	-5.4547E+03	2.7685E+03	3.9222E+03
-1.1949E+02	0.0000E+00	6.8693E+04	-7.4224E+04	1.0562E+04	1.6667E-01	-5.4547E+03	2.4609E+03	2.2386E+02
-1.4770E+02	6.9631E+02	1.7500E+00	-7.4224E+04	7.9215E+03	1.1322E+04	-5.4547E+03	2.1533E+03	1.1250E+03
-1.4770E+02	6.6846E+02	5.2500E+00	-7.4224E+04	5.2810E+03	8.6332E+04	-5.4547E+03	1.8457E+03	6.3319E+03
-1.4770E+02	6.4061E+02	1.7500E+00	-7.4224E+04	2.6405E+03	3.3653E+05	-5.4547E+03	1.5381E+03	2.3517E+03
-1.4770E+02	6.1276E+02	5.2500E+00	-7.4224E+04	0.0000E+00	7.9303E+05	-5.4547E+03	1.2304E+03	4.0061E+03
-1.4770E+02	5.8490E+02	3.5000E+00	-7.7018E+04	7.9215E+03	1.5282E+03	-5.4547E+03	9.2284E+02	3.9251E+03
-1.4770E+02	5.5705E+02	3.5000E+00	-7.7018E+04	5.2810E+03	4.2937E+04	-5.4547E+03	6.1522E+02	5.0516E+03
-1.4770E+02	5.2920E+02	1.7500E+00	-7.7018E+04	2.6405E+03	1.0648E+05	-5.4547E+03	3.0761E+02	3.5137E+04
-1.4770E+02	5.0135E+02	1.7500E+00	-7.7018E+04	0.0000E+00	1.3065E+05	-5.4547E+03	0.0000E+00	9.5430E+04
-1.4770E+02	4.7349E+02	1.7500E+00	-7.9812E+04	0.0000E+00	1.0229E+04	-5.8531E+03	4.6142E+03	2.5000E+00
-1.4770E+02	4.1779E+02	1.7500E+00	-8.2606E+04	0.0000E+00	1.6667E-01	-5.8531E+03	4.3066E+03	5.9074E+01
-1.4770E+02	2.7853E+02	1.0417E+01				-5.8531E+03	3.9990E+03	2.8211E+01
-1.4770E+02	1.9497E+02	3.5000E+00				-5.8531E+03	3.6913E+03	8.2500E-01
-1.4770E+02	1.6712E+02	1.3917E+01				-5.8531E+03	3.3837E+03	1.1315E+02
-1.4770E+02	1.3926E+02	3.5000E+00				-5.8531E+03	3.0761E+03	2.5000E+00

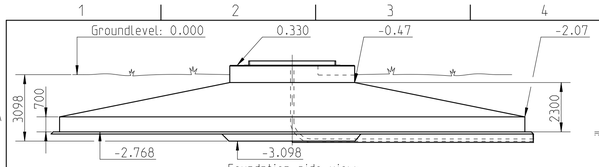
Markov Matrices								
Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-1.4770E+02	1.1141E+02	2.7834E+01				-5.8531E+03	2.7685E+03	3.8962E+02
-1.4770E+02	8.3558E+01	4.7659E+01				-5.8531E+03	2.4609E+03	2.5000E+00
-1.4770E+02	5.5705E+01	2.7266E+02				-5.8531E+03	2.1533E+03	7.8140E+02
-1.4770E+02	2.7853E+01	9.4625E+02				-5.8531E+03	1.8457E+03	7.8163E+02
-1.4770E+02	0.0000E+00	2.2207E+03				-5.8531E+03	1.5381E+03	3.7193E+02
-1.7591E+02	7.5202E+02	1.7500E+00				-5.8531E+03	1.2304E+03	2.2721E+03
-1.7591E+02	6.6846E+02	1.7500E+00				-5.8531E+03	9.2284E+02	3.0148E+03
-1.7591E+02	6.4061E+02	5.2500E+00				-5.8531E+03	6.1522E+02	7.3341E+02
-1.7591E+02	6.1276E+02	7.0000E+00				-5.8531E+03	3.0761E+02	1.4459E+04
-1.7591E+02	5.8490E+02	3.5000E+00				-5.8531E+03	0.0000E+00	4.2482E+04
-1.7591E+02	5.5705E+02	1.7500E+00				-6.2516E+03	6.4598E+03	1.2500E+00
-1.7591E+02	5.2920E+02	5.2500E+00				-6.2516E+03	6.1522E+03	5.6574E+01
-1.7591E+02	5.0135E+02	1.7500E+00				-6.2516E+03	3.9990E+03	5.6574E+01
-1.7591E+02	4.7349E+02	3.5000E+00				-6.2516E+03	3.6913E+03	1.2443E+01
-1.7591E+02	4.4564E+02	3.5000E+00				-6.2516E+03	3.3837E+03	1.2443E+01
-1.7591E+02	1.6712E+02	2.0834E+01				-6.2516E+03	2.4609E+03	5.6574E+01
-1.7591E+02	1.3926E+02	7.0000E+00				-6.2516E+03	2.1533E+03	2.6633E+02
-1.7591E+02	1.1141E+02	6.0000E+00				-6.2516E+03	1.8457E+03	2.5000E+00
-1.7591E+02	8.3558E+01	1.8917E+01				-6.2516E+03	1.2304E+03	1.2443E+01
-1.7591E+02	5.5705E+01	1.3524E+02				-6.2516E+03	9.2284E+02	1.2559E+02
-1.7591E+02	2.7853E+01	4.1878E+02				-6.2516E+03	6.1522E+02	1.0515E+03
-1.7591E+02	0.0000E+00	5.6799E+02				-6.2516E+03	3.0761E+02	6.1630E+03
-2.0412E+02	7.2417E+02	1.7500E+00				-6.2516E+03	0.0000E+00	3.8475E+04
-2.0412E+02	6.6846E+02	3.5000E+00				-6.6501E+03	7.3827E+03	2.8287E+01
-2.0412E+02	6.1276E+02	3.5000E+00				-6.6501E+03	4.9218E+03	8.2500E-01
-2.0412E+02	5.8490E+02	7.0000E+00				-6.6501E+03	4.3066E+03	2.5000E+00
-2.0412E+02	5.5705E+02	5.2500E+00				-6.6501E+03	2.7685E+03	1.2443E+01
-2.0412E+02	4.7349E+02	1.7500E+00				-6.6501E+03	1.5381E+03	8.2500E-01
-2.0412E+02	1.6712E+02	1.0417E+01				-6.6501E+03	9.2284E+02	3.3250E+00
-2.0412E+02	1.3926E+02	3.5000E+00				-6.6501E+03	6.1522E+02	2.6633E+02
-2.0412E+02	8.3558E+01	2.4242E+01				-6.6501E+03	3.0761E+02	8.1254E+02
-2.0412E+02	5.5705E+01	2.1000E+01				-6.6501E+03	0.0000E+00	5.2907E+03
-2.0412E+02	2.7853E+01	3.3583E+02				-7.0486E+03	7.0751E+03	2.5000E+00
-2.0412E+02	0.0000E+00	2.8228E+02				-7.0486E+03	4.3066E+03	5.6574E+01
-2.3233E+02	1.9497E+02	2.5000E+00				-7.0486E+03	2.4609E+03	2.5000E+00
-2.3233E+02	1.1141E+02	9.5000E+00				-7.0486E+03	1.2304E+03	5.7399E+01
-2.3233E+02	8.3558E+01	1.7417E+01				-7.0486E+03	9.2284E+02	1.5293E+03

Markov Matrices

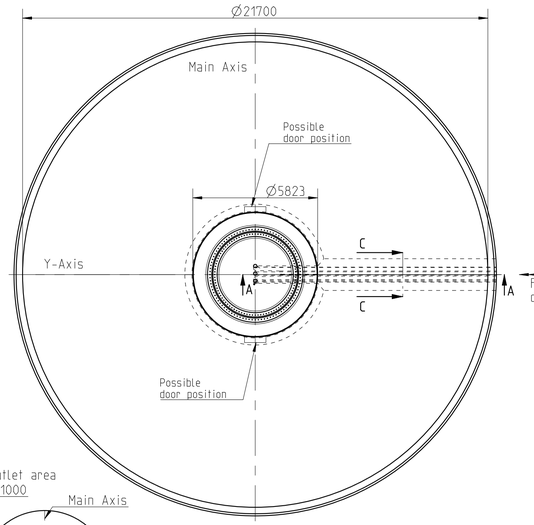
Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-2.3233E+02	5.5705E+01	2.4500E+01				-7.0486E+03	6.1522E+02	5.6574E+01
-2.3233E+02	2.7853E+01	5.2417E+01				-7.0486E+03	3.0761E+02	1.3268E+01
-2.3233E+02	0.0000E+00	7.4917E+01				-7.0486E+03	0.0000E+00	3.3015E+03
-2.6054E+02	1.1141E+02	7.0000E+00				-7.4471E+03	3.6913E+03	8.2500E-01
-2.6054E+02	8.3558E+01	1.3917E+01				-7.4471E+03	3.3837E+03	2.5000E+00
-2.6054E+02	5.5705E+01	1.4000E+01				-7.4471E+03	2.7685E+03	2.5000E+00
-2.6054E+02	2.7853E+01	6.2917E+01				-7.4471E+03	1.5381E+03	2.5000E+00
-2.6054E+02	0.0000E+00	6.2000E+01				-7.4471E+03	3.0761E+02	8.2500E-01
-2.8875E+02	2.5067E+02	1.0417E+01				-7.4471E+03	0.0000E+00	2.1911E+03
-2.8875E+02	1.1141E+02	1.7417E+01				-7.8455E+03	2.7685E+03	8.2500E-01
-2.8875E+02	8.3558E+01	1.0500E+01				-7.8455E+03	3.0761E+02	2.5000E+00
-2.8875E+02	5.5705E+01	1.7500E+01				-7.8455E+03	0.0000E+00	1.5970E+03
-2.8875E+02	2.7853E+01	3.4917E+01				-8.2440E+03	1.5381E+03	8.2500E-01
-2.8875E+02	0.0000E+00	8.0417E+01				-8.2440E+03	3.0761E+02	5.6574E+01
-3.1696E+02	1.1141E+02	1.0500E+01				-8.2440E+03	0.0000E+00	3.3250E+00
-3.1696E+02	8.3558E+01	1.4000E+01				-8.6425E+03	6.1522E+02	8.2500E-01
-3.1696E+02	5.5705E+01	3.1500E+01				-8.6425E+03	0.0000E+00	2.4886E+01
-3.1696E+02	2.7853E+01	3.8500E+01				-9.0410E+03	0.0000E+00	8.2500E-01
-3.1696E+02	0.0000E+00	4.5500E+01				-9.4394E+03	0.0000E+00	2.5000E+00
-3.4516E+02	1.6712E+02	3.5000E+00						
-3.4516E+02	1.3926E+02	3.5000E+00						
-3.4516E+02	1.1141E+02	7.0000E+00						
-3.4516E+02	8.3558E+01	1.4000E+01						
-3.4516E+02	5.5705E+01	3.1500E+01						
-3.4516E+02	2.7853E+01	1.7500E+01						
-3.4516E+02	0.0000E+00	8.0500E+01						
-3.7337E+02	1.6712E+02	3.5000E+00						
-3.7337E+02	1.3926E+02	3.5000E+00						
-3.7337E+02	1.1141E+02	3.5000E+00						
-3.7337E+02	8.3558E+01	1.0500E+01						
-3.7337E+02	5.5705E+01	3.1500E+01						
-3.7337E+02	2.7853E+01	4.9000E+01						
-3.7337E+02	0.0000E+00	5.2500E+01						
-4.0158E+02	1.9497E+02	3.5000E+00						
-4.0158E+02	1.3926E+02	7.0000E+00						
-4.0158E+02	1.1141E+02	3.5000E+00						
-4.0158E+02	8.3558E+01	7.0000E+00						

Markov Matrices								
Tower shear, bottom F_y [kN]			Tower bending, bottom M_x [kNm]			Tower torsion, bottom M_z [kNm]		
Level	Range	Cycles	Level	Range	Cycles	Level	Range	Cycles
-4.0158E+02	5.5705E+01	1.0500E+01						
-4.0158E+02	2.7853E+01	4.5500E+01						
-4.0158E+02	0.0000E+00	5.2500E+01						
-4.2979E+02	1.1141E+02	3.5000E+00						
-4.2979E+02	8.3558E+01	7.0000E+00						
-4.2979E+02	5.5705E+01	1.0500E+01						
-4.2979E+02	2.7853E+01	1.7500E+01						
-4.2979E+02	0.0000E+00	2.4500E+01						
-4.5800E+02	5.5705E+01	3.5000E+00						
-4.5800E+02	2.7853E+01	7.0000E+00						
-4.5800E+02	0.0000E+00	1.7500E+01						
-4.8621E+02	8.3558E+01	3.5000E+00						
-4.8621E+02	2.7853E+01	7.0000E+00						
-4.8621E+02	0.0000E+00	1.4000E+01						
-5.4263E+02	0.0000E+00	3.5000E+00						

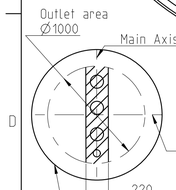
Table 5-5 [2] Markov Matrix.



Foundation side view:

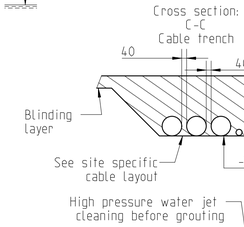


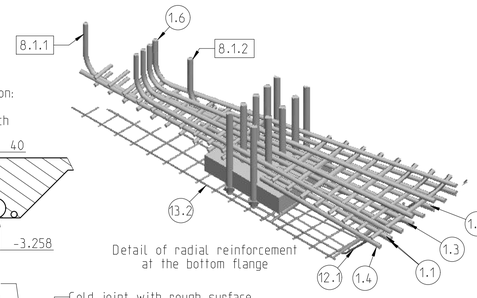
Foundation top view:



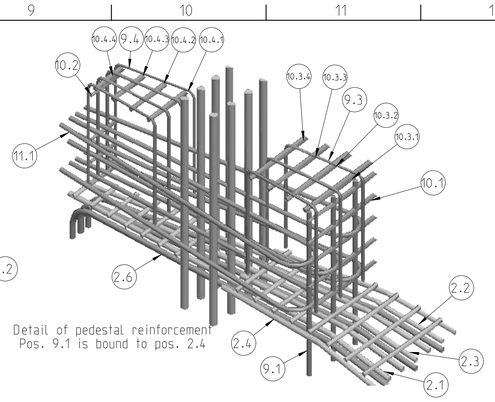
Topview: Piping detail at the pedestal
All cable outlets must be aligned with the Main Axis within the outlet area

Max. tube height above top of concrete level: 25mm (see decription 0017-5653). Precaution to be taken to prevent damage of HV-cables (e.g. during tube cutting) and to prevent concrete / water intrusion into tubes.

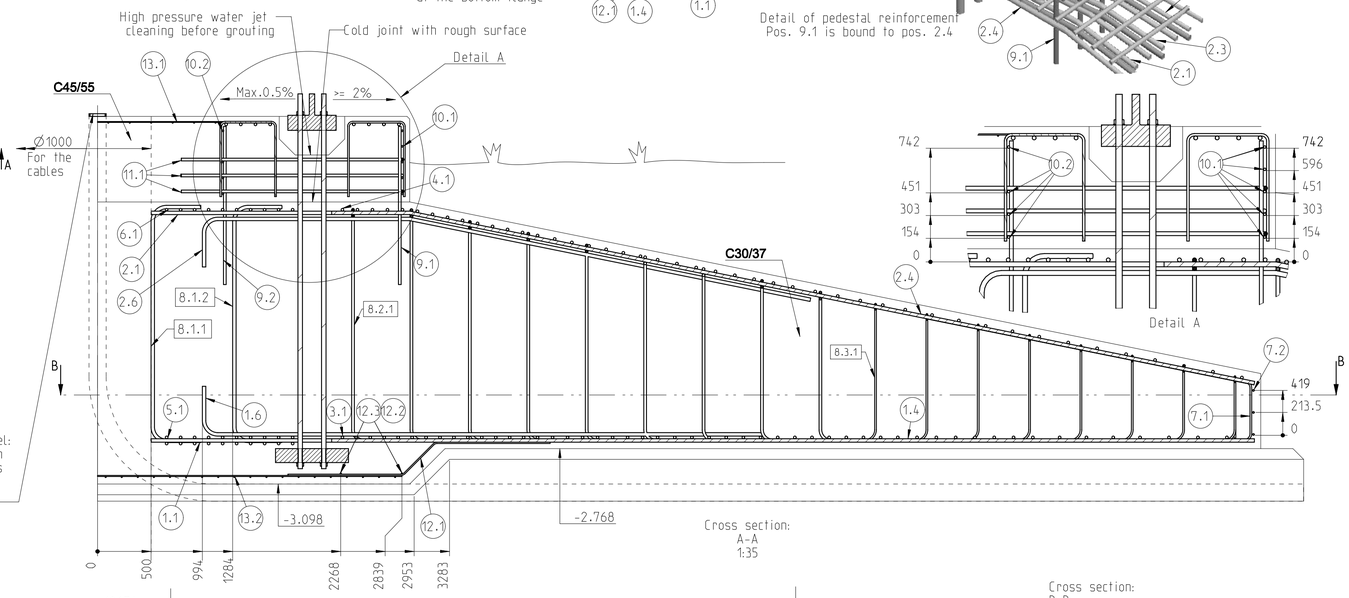




Detail of radial reinforcement at the bottom flange

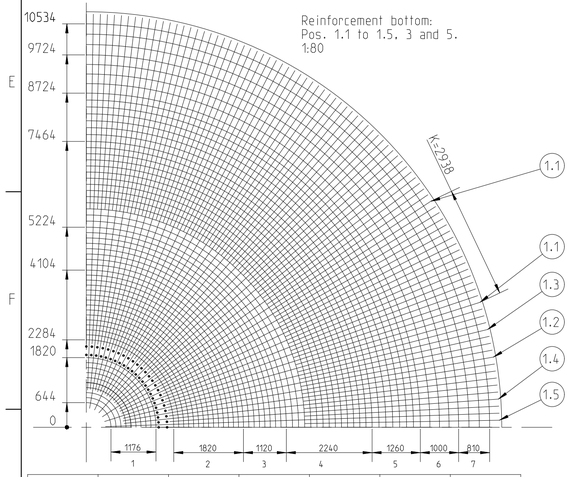


Detail of pedestal reinforcement
Pos. 9.1 is bound to pos. 2.4



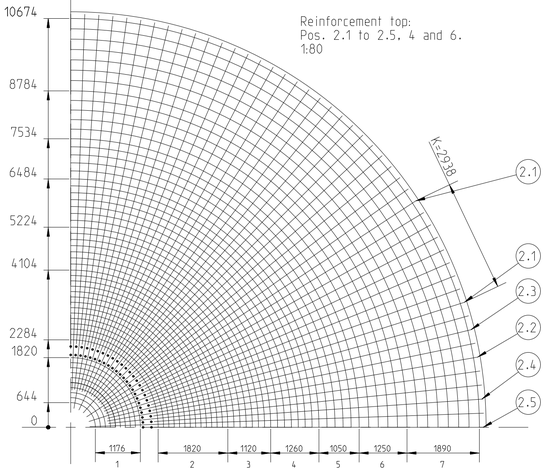
Detail A

Cross section:
A-A
1:35



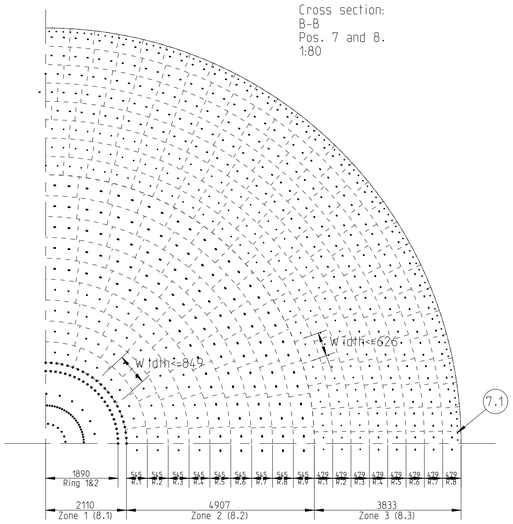
Reinforcement bottom:
Pos. 1.1 to 1.5, 3 and 5.
1:80

1	2	3	4	5	6	7
Pos. 5.1-5.10 2x10 pcs. Ø25-130mm	Pos. 3.1-3.15 15 pcs. Ø25-130mm	Pos. 3.16-3.23 8 pcs. Ø25-140mm	Pos. 3.24-3.37 14 pcs. Ø25-160mm	Pos. 3.38-3.44 7 pcs. Ø25-160mm	Pos. 3.45-3.48 4 pcs. Ø25-250mm	Pos. 3.49-3.51 3 pcs. Ø25-270mm



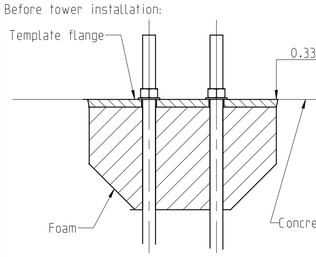
Reinforcement top:
Pos. 2.1 to 2.5, 4 and 6.
1:80

1	2	3	4	5	6	7
Pos. 6.1-6.10 10 pcs. Ø25-130mm	Pos. 4.1-4.14 14 pcs. Ø25-140mm	Pos. 4.15-4.21 7 pcs. Ø25-160mm	Pos. 4.22-4.28 7 pcs. Ø25-180mm	Pos. 4.29-4.33 5 pcs. Ø25-210mm	Pos. 4.34-4.38 5 pcs. Ø25-250mm	Pos. 4.39-4.45 7 pcs. Ø25-270mm

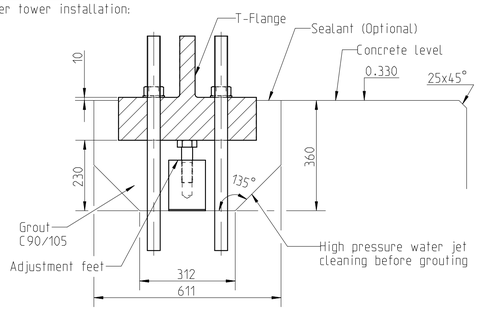


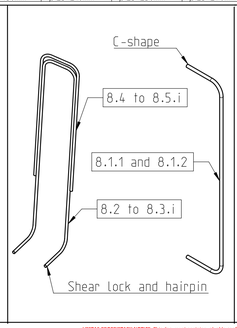
Cross section:
B-B
Pos. 7 and 8.
1:80

Before tower installation:



After tower installation:





Number and height of C-shaped bars, shear locks and hair pins (see also Cut and Bending list)

	Zone 1 C-shape Ø32			Zone 2 Ø25					Zone 3 Ø16				
	Number	Pos.	C-shape Height	Number	i	Shear locks Height Pos. 8.2.i	i	Hairpins Height Pos. 8.4.i	Number	i	Shear locks Height Pos. 8.3.i	i	Hairpins Height Pos. 8.5.i
Ring 1	23	8.1.1	2212	18	1	2116	1	1476	73	1	1231	1	593
Ring 2	23	8.1.2	2212	22	2	2113	2	1476	78	2	1135	2	593
Ring 3	-	-		26	3	2003	3	1476	82	3	1038	3	593
Ring 4	-	-		30	4	1893	4	1476	87	4	942	4	593
Ring 5	-	-		34	5	1783	5	1476	92	5	845	5	593
Ring 6	-	-		38	6	1673	6	1476	97	6	748	6	593
Ring 7	-	-		42	7	1563	7	1476	102	7	652	7	593
Ring 8	-	-		46	8	1453	8	1405	106	8	555	8	580
Ring 9	-	-		50	9	1344	9	1295	0	-	-	-	-
Ring 10	-	-		0	-	-	-	-	0	-	-	-	-
Ring 11	-	-		0	-	-	-	-	0	-	-	-	-
Ring 12	-	-		0	-	-	-	-	0	-	-	-	-

Information for design approver:

Loads: 0074-8846, calculation: 0075-1449.V02

Soil condition to be fulfilled:

Assumed characteristic soil parameters: friction angle 30° or undrained shear strength 55 KN/m².
Min. density of soil 18 / 8 KN/m³, density of back filling 18 / 8 KN/m³.
Weight of backfilling is included in stability and shall not be removed.
Max. ground water level: 2.768 m under terrain
No drainage required.
Required rotational stiffness: min. 100 GNm/rad according to load report 0074-8846
Max. allowable tilting of the foundation due to permanent settlements: 3 mm/m
Max. plastic design soil pressure: 193 KN/m², constant over substitute area, with a PSF of 1.35 on wind, 0.9 on tower weight and backfilling, 1.0 on foundation weight
Max. elastic soil pressure 223 KN/m² with PSF equal to 1.0 for all loads.
Soil investigations at the site shall be in accordance with EN 1997-1:2004, section 2-4, and must show compliance with the design assumption.

Specifications:

All works carried out acc. to EN 1992-1-1/AC:2010 Design of Concrete Structures, EN 1997-1/AC:2009" Geotechnical Design, general rules, EN 1997-2/AC:2010 Geotechnical Design, investigation and testing.
General description: 0005-8491. Design life time: 20 years.

Anchor cage, approval drawing 0074-9532.V01:

The anchor cage incl. adjustment feet is provided by Vestas as loose parts or assembled.
The anchor cage shall be set upon the blinding layer and adjusted to the correct position vertically and horizontally by using the adjustment feet at the lower flange. During casting, which must be done simultaneously inside and outside the cage, great care must be taken to ensure that the cage does not displace and that the lower flange is in full contact with compacted concrete, below and above flange. Max. vertical deviation after concreting +/- 4 mm.
Weight of anchor cage, app. 19600 kg total.
Anchors shall be post tensioned according to approval drawing 0074-9532.V01

Concrete:

Concrete works acc. to EN 13670:2009 "Execution of concrete structures".
The concrete must be composed, mixed and prepared according to EN 206-1 in the strength class: C30/37 for plate, C45/55 for pedestal. Exposure class: XC4 / XD1 / XS1 / XF3 / XA1
Maximum aggregate size in the area of the bottom and top reinforcement: 16mm (in other areas max. 32mm)
Blinding layer min. 100 mm and dimension is not represented in the drawing.
Low-creeping and low-shrink concrete for exterior buildings units, low heat of hydration
Min. required density of concrete due to stability: 2338 kg/m3.
Covering: Cnom = 60 mm against form work or blinding layer, Cnom = 110 mm against soil (no formwork).
Concrete quality control according to EN 206-1.

Reinforcement:

Steel bars S500 ductility class B or C according to EN 10080 with min Fyk = 500 N/mm².

Grout:

Non-shrink grout, min. compression strength C90/105
Min. compression strength at time of post tension 64 N/mm² and after 1 day: 10 N/mm².
Post tension force: 628 KN equal to 56% of Fuk for the Gr 10.9 anchors and an elongation of 7.4 to 9.7 mm.

Cable conduits (PVC tubes) - NOT a Vestas delivery:

See general discription in "Switchgear installation vs foundation tubes" 0017-5653.
See site specific cable layout for actual number and size of conduits.

Earthing:

See "Vestas Earthing System", esp. description 0019-2575 "Earthing on anchor cage foundation" incl. copper conductors, bolts, nuts and washers delivered with the anchor cage.

Reinforcement Cut and Bending List: 0075-1456.V02

Radial bars, bottom part:

1.1 23 pcs. Ø32 x 10290 mm, through anchors.
1.2 23 pcs. Ø32 x 9816 mm, through anchors.
1.3 46 pcs. Ø32 x 9311 mm, through anchors.
1.4 92 pcs. Ø32 x 8606 mm, outside anchors.
1.5 184 pcs. Ø20 x 5079 mm, outside anchors.
1.6 92 pcs. Ø32 x 5593 mm, above 1.1-1.3.

Radial bars, top part:

2.1 23 pcs. Ø32 x 10448 mm, through anchors.
2.2 23 pcs. Ø32 x 9974 mm, through anchors.
2.3 46 pcs. Ø32 x 9469 mm, through anchors.
2.4 92 pcs. Ø32 x 8764 mm, outside anchors.
2.5 N/A
2.6 92 pcs. Ø32 x 6110 mm, below 2.1-2.3.

Concentric bars outside anchors, bottom part:

3.1 ø25 ring Ø4568, 3 pcs. L=5743 mm, outer ring no. 1.
3.51 ø25 ring Ø21068, 6 pcs. L=11990 mm, outer ring no. 51.
See table in Cut & Bending List.

Concentric bars outside anchors, top part:

4.1 ø25 ring Ø4568, 3 pcs. L=6154 mm, outer ring no. 1.
4.45 ø25 ring Ø21348, 7 pcs. L=10951 mm, outer ring no. 45.
See table in Cut & Bending List.

Concentric bars inside anchors, bottom part, 1 layer below and 1 layer above pos 1:

5.1 ø25 ring Ø1288, 2 x 1 = 2 pcs. L=5035 mm, ring no. 1.
5.10 ø25 ring Ø3639, 2 x 2 = 4 pcs. L=6704 mm, ring no. 10.
5.i ø25 ring Ø1027 + 261 * i, i = 1-10, ring no. i. Total number of rings: 20. See Cut & Bending list.

Concentric bars inside anchors, top part, 1 layer above pos 2:

6.1 ø25 ring Ø1288, 1 x 1 = 1 pcs. L=5458 mm, ring no. 1.
6.10 ø25 ring Ø3639, 1 x 3 = 3 pcs. L=5222 mm, ring no. 10.
6.i ø25 ring Ø1027 + 261 * i, i = 1-10, ring no. i. Total number of rings: 10. See Cut & Bending list.

Vertical bars at edge

7.1 368 pcs ø16 x 932 mm, vertical bars at outer edge.
7.2 3 rings ø16 x Ø21564, 3 x 6 = 18 pcs L=11851 mm, horizontal rings at outer edge (at pos. 7.1).

Shear locks and hair pins - see Cut and Bending list for correct lengths

8.1 46 pcs ø32 x 2966 mm, shear locks inside anchor cage (zone 1) - C-shaped.
8.2 306 pcs ø25 x approx. 4671 mm (mean value), shear locks in punching zone (zone 2).
8.3 717 pcs ø16 x approx. 2697 mm (mean value), shear locks in shear zone (zone 3).
8.4 306 pcs ø25 x approx. 2910 mm (mean value), hair pins for all zone 2.
8.5 717 pcs ø16 x approx. 1469 mm (mean value), hair pins for zone 3.

Vertical bars and bows in pedestal

9.1 92 pcs ø25 x 1474 mm, vertical bar outside anchors.
9.2 23 pcs ø25 x 1474 mm, vertical bar inside anchors.
9.3 92 pcs ø20 x 1806 mm, outer bows, see Cut & Bending list.
9.4 92 pcs ø20 x 1796 mm, inner bows, see Cut & Bending list.

Horizontal rings in pedestal

10.1 5 rings ø20 x Ø5683, 5 x 3 = 15 pcs L=6952 mm, at outer vertical bars pos 9.1.
10.2 4 rings ø20 x Ø2338, 4 x 1 = 4 pcs L=8346 mm, at inner vertical bars pos 9.2.
10.3.1 1 ring ø25 x Ø5623, 1 x 3 = 3 pcs L=7300 mm, ring 1 under bow pos 9.3.
10.3.2 1 ring ø25 x Ø5342, 1 x 3 = 3 pcs L=7006 mm, ring 2 under bow pos 9.3.
10.3.3 1 ring ø25 x Ø5062, 1 x 3 = 3 pcs L=6712 mm, ring 3 under bow pos 9.3.
10.3.4 1 ring ø25 x Ø4781, 1 x 3 = 3 pcs L=6418 mm, ring 4 under bow pos 9.3.
10.4.1 1 ring ø25 x Ø3219, 1 x 2 = 2 pcs L=6468 mm, ring 1 under bow pos 9.4.
10.4.2 1 ring ø25 x Ø2945, 1 x 2 = 2 pcs L=6038 mm, ring 2 under bow pos 9.4.
10.4.3 1 ring ø25 x Ø2672, 1 x 2 = 2 pcs L=5608 mm, ring 3 under bow pos 9.4.
10.4.4 1 ring ø25 x Ø2398, 1 x 1 = 1 pcs L=8945 mm, ring 4 under bow pos 9.4.

Hooks under grout trench (splitting bars)

11.1 138 pcs ø25 x 3989 mm, bended 184.2 deg., see Cut & Bending list.

Z-Bars under the anchor flange

12.1 92 pcs ø12 x 2567 mm, under base flange, see Cut & Bending list for detailed geometry.
12.2 1 ring ø12 x Ø5678, 1 x 3 = 3 pcs. L=6366mm, ring placed on Z-bows pos. 12.1.
12.3 1 ring ø12 x Ø4766, 1 x 3 = 3 pcs. L=5411mm, ring placed on Z-bows pos. 12.1.

Shrinkage mesh, cut to match cable conduits and adjustment feet

13.1 ø2383 mm top reinforcement mesh ø10 / 150 mm or equivalent with min. 524 mm²/m
13.2 ø5678 mm bottom reinforcement mesh ø10 / 150 mm or equivalent with min 524 mm²/m

Tolerances:

All non specified tolerances: +/- 10 mm

Remarks:

Dimensions in mm. Reinforcement shall be tied with steel wire per 500 mm minimum, no welding permitted.
The anchor cage is rotated to place the door in the right direction.
Basic anchorage length for C30/37: Lb = 35.74 x Ø for good conditions.
Basic anchorage length for C30/37: Lb = 51.06 x Ø for other conditions.
Lap length: Ls = 1.4 x Lb. Bending diameters: 7 x Ø for Ø >= 20 mm, 4 x Ø for Ø < 20 mm.
All overlap of bars shall be staggered.

Bonding- and overlap lengths, bending diameters:

Size	Anchor	Overlap	Bending Ø	Remark
Ø32	1031	1443	n.a.	Bottom radial bar (pos 1)
Ø32	1472	2061	140	Top radial bar (pos 2)
Ø25	685	959	N/A	Bottom concentric ring outside anchors (pos 3)
Ø25	979	1370	N/A	Top concentric ring outside anchors (pos 4)
Ø25	706	988	N/A	Bottom concentric ring inside anchors (pos 5)
Ø25	1008	1412	N/A	Top concentric ring inside anchors (pos 6)
Ø20	715	1001	N/A	Concentric ring in pedestal (pos 10)
Ø20	500	701	80	Rings at foundation edge (pos 7.2)

Blinding layer 40 m3, concrete 553 m3, grout 1.75 m3, reinforcement 68 t, reinforcement ratio 123 kg/m3

Item no.	Mass (kg)	Certificate	Format	Status	Revised by	Created date	Created by
0075-1455	-	-	A1	Approved	GUBAS	2018-06-05	MDRAF
Material specification			Scale	Change no.	PDM ver.	Reviewed date	Reviewed by
-			1:35	461022	2.1	16.08.2018	MDVAN
-			Proj.	Item description			
			Pro/E	V150 4.0/4.2MW MK3 HH105 IEC3B DLGWL GWL at foundation level			
Vestas. vestas.com			Metric Dimensions shown in mm unless otherwise specified	Replaces / Copy of -	Drawing no. 0075-1455	Ver. 2	Sheet 1 of 1

T07 0075-1455 Ver 02 - Approved - Exported from DMS: 2018-10-10 by CODEL