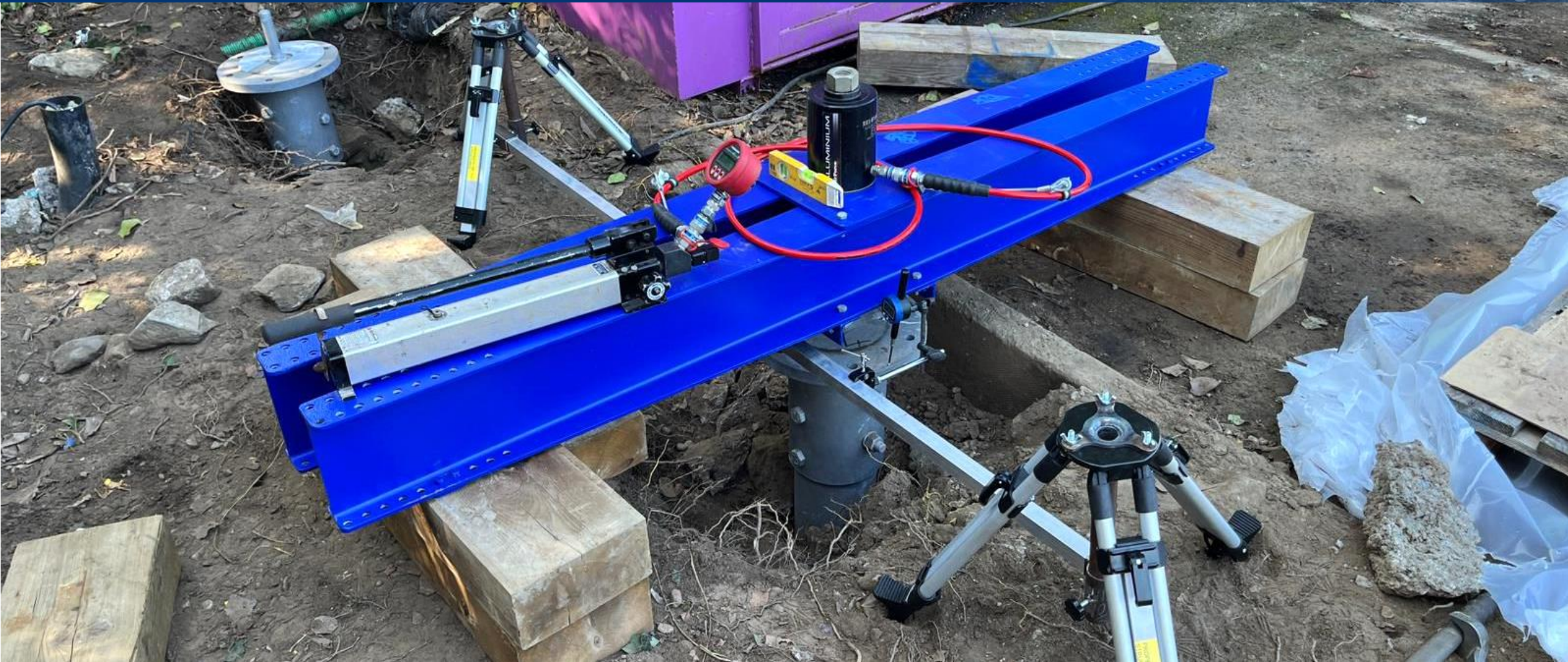


FLI structures

Screw Pile Testing Course



FLI structures

Background - Why?

- Verification tool used to confirm the pile has sufficient capacity for its application
- Pile testing is specified in two scenarios:
 - As part of the design and should be completed regardless of the outcome of the installation
 - When there are concerns the pile may not have sufficient capacity – e.g. the pile has not reached minimum torque



FLI structures

Background – Types of Pile Test

TENSION

- Relatively simple set up with either reaction piles each side but most commonly with timbers or similar to bear directly on the ground each side
- Most common method we use

COMPRESSION

LATERAL

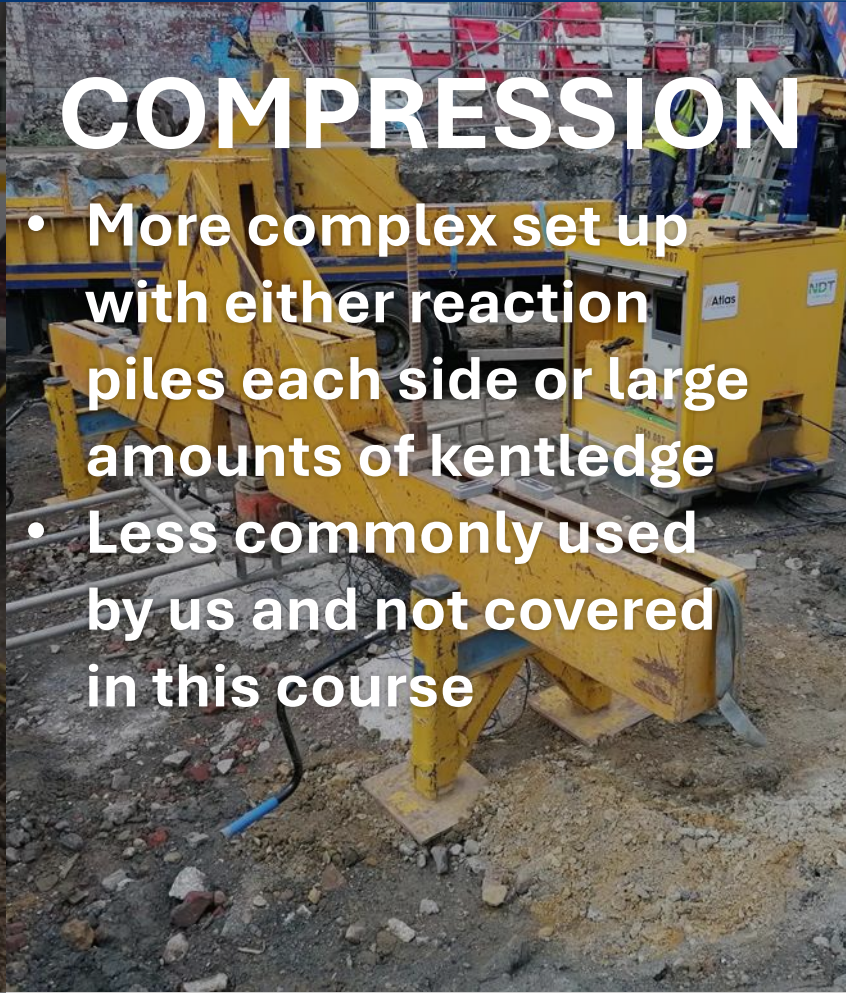
FLI structures

Background – Types of Pile Test

TENSION



COMPRESSION



- More complex set up with either reaction piles each side or large amounts of kentledge
- Less commonly used by us and not covered in this course

LATERAL



FLI structures

Background – Types of Pile Test

TENSION



COMPRESSION



LATERAL

- More complex set up with piles reacting against each other or pulled with large plant
- Used when there is a concern for the lateral capacity of a pile
- Rarely used and not covered in this course



FLI structures

Test Equipment

On the right are the essential items required for tension testing.

Tripods with Aluminium square tube

Hydraulic Equipment (see next slide)

Load Spreader Plate

Digital Deflection Gauges

Couplers

M20 & M36 Studding

Load Beams

Timber Sleepers



Test Equipment

On the right are the essential items required for tension testing.

Hydraulic Hand Pump

Digital Load Gauge

Stopwatch

Hose assembly

Hydraulic Load Cylinder



Health & Safety

- Trained Personnel
- Method Statement & Risk Assessments
- Never operate the equipment with worn, damaged or missing parts.
- Survey Area
- Slips & Trips
- Vehicle & Plant Movements
- Layout work area – Face hazards
- Lifting & Handling heavy items
- PPE
 - Hard Hat
 - Safety Boots
 - High Viz clothing
 - Safety Glasses
 - Gloves

Daily Checks + Maintenance & Calibration

Daily Checks:

- Dial gauges operating smoothly
- Digital load gauge condition is OK & has battery
- Load cylinder, hand pump, hose & connections all OK with no leaks
- Threaded couplers & M20 dropdown rod OK
- Test beam & measurement support frame OK

Maintenance & Calibration:

- All hydraulic equipment to be maintained and calibrated at 12 monthly intervals

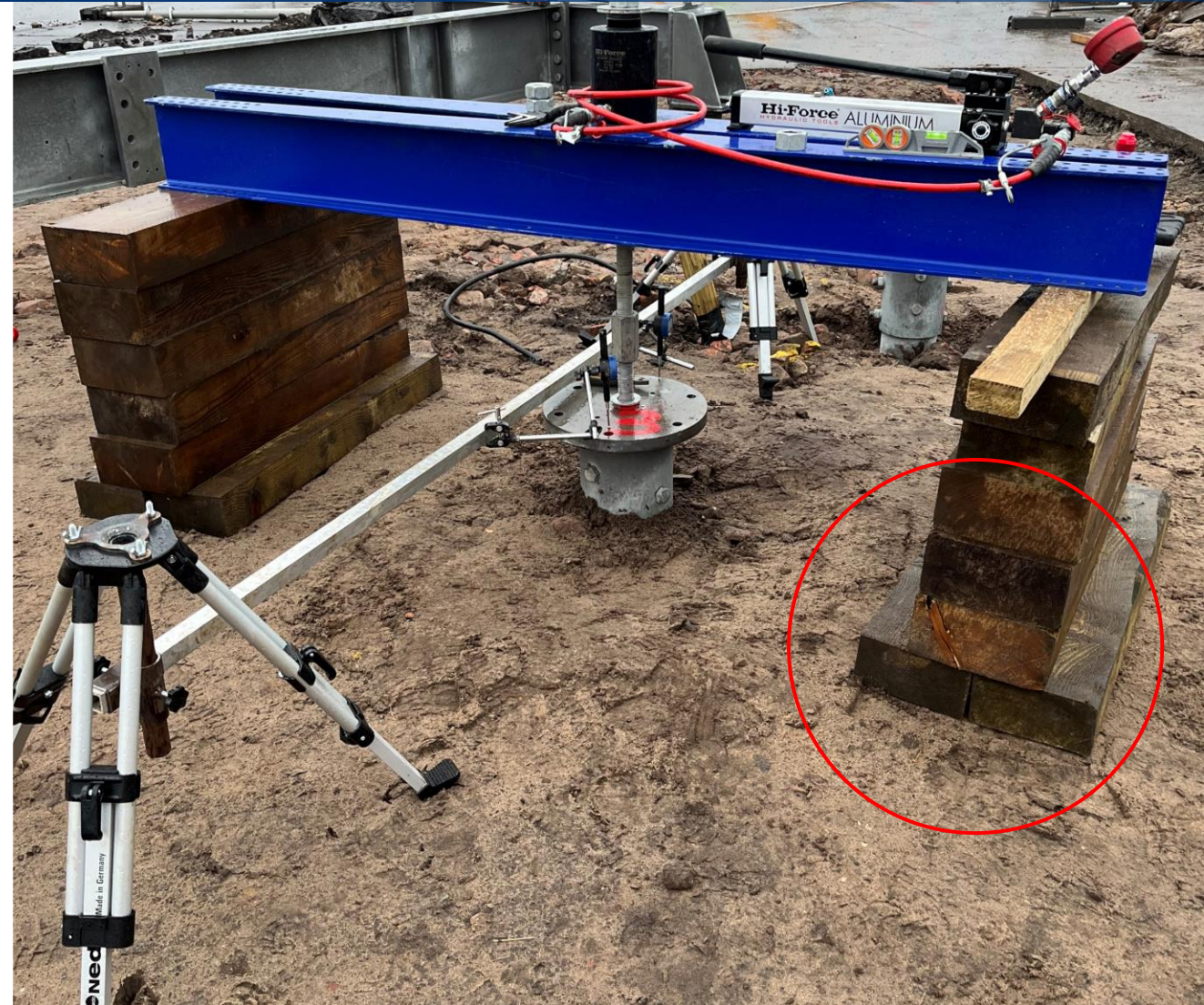
Test Set-up

- Sleepers to be 500mm clear of piles horizontally
- Test beam to be 200mm above pile cap
- Load beam to be central over pile
- Level load beam using packer plates



Key Watchpoint – Soft Ground

- Often when the ground is soft, the reaction force through the sleepers is too much for a single row of sleepers to take without significant settlement.
- To mitigate against this, spread the load with additional sleepers, reducing the settlement.



FLI structures

Test Set-up

Fit appropriate coupler to pile cap bolt and studding

Fit load spreader plate & load cylinder, tighten the nut

Ensure sufficient clearance for both coupler and gauges to underside of beam (min 50mm)



FLI structures

Test Set-up

Fit digital load gauge

Ensure hose is neat and cannot interfere with measuring equipment

Fit hose and hand pump to load cylinder



FLI structures

Test Set-up

Ensure measuring support frame is:

- STABLE!
- 90° to load beam
- Level with pile cap (adjustable legs)
- Clear of pile & load beam



Dial gauge support assemblies:

- Fit gauge clamps (x2)
- Space the two gauges equally & opposite
- Ensure gauges are close to the pile centre
- Ensure full travel of measuring rod
- Keep gauges clear of load beam
- Make gauges perpendicular to pile cap

Test Set-up

**DO NOT BUMP MEASURING SUPPORT
FRAME**

Bumps change displacement readings and
invalidate the test.



Test Set-up

Raked Piles:

- Load beam to be set up perpendicular to the pile rather than level as per vertical piles
- Set sleepers in-line with rake
- Adjust sleeper stack and packs to achieve required slope on load beam
- Set dial gauge travel parallel to pile length

FLI structures

Test Method

Method Summary

- 5kN - initial load to tighten everything up, zero measurements and proceed (sufficient time must be allowed here to let the piles & equipment settle, at least 5 minutes, but generally until the displacement gauges show no incremental movement.
- 50% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
- 100% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
- 150% of working load - 30min hold - measure deflection under load
- 100% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
- 50% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
- 0% of working load - measure recovered deflection
- If in any case deflection continues to increase under a constant load after the 5mins period then the load should be held for a further 15mins and the cumulative deflection recorded.
- Failure is normally indicated by the pile continuing to deflect under constant load, and the load to the ram has to be constantly "topped up" as it loses force due to the pile movement.

Test Readings

	Initial Load	Initial Load	50%	50%	100%	100%	150%	150%	100%	100%	50%	50%	0%	0%
Actual Load	5.0 kN	5.0 kN	69.5 kN	69.5 kN	139 kN	139 kN	208.5 kN	208.5 kN	139 kN	139 kN	69.5 kN	69.5 kN	0.00 kN	0.00 kN
Start time	2:22 pm	2:22 pm	2:27 pm	2:27 pm	2:42 pm	2:42 pm	3:02 pm	3:03 pm	3:42 pm	3:42 pm	3:49 pm	3:49 pm	3:55 pm	3:55 pm
Gauge	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0 MINS	4.45	3.32	7.45	6.46	12.21	11.25	24.13	23.82	28.1	27.34	27.1	26.31	14.95	15.66
5 MINS	4.55	3.34	7.87	6.83	13.07	12.17	27.94	27.33	28.66	27.9	26.82	26.02		
10 MINS			7.89	6.85	13.32	12.44	29.31	28.68						
15 MINS					13.46	12.58	29.92	29.23						
20 MINS					13.56	12.68	30.41	29.81						
25 MINS							30.58	29.95						
30 MINS							30.6	29.97						
Final reading for each load step	4.55	3.34	7.89	6.85	13.56	12.68	30.6	29.97	28.66	27.9	26.82	26.02	14.95	15.66

Form 33H – Test Log Sheet:

- Fill in all necessary details of the job (often pre-filled)
- Check loads correspond to pile drawings (150% load value given on both)
- Check pile numbering convention corresponds with Form 33C – Installation Log
- Close hand pump valve – rotate clockwise
- Record datum dial gauge measurement
- Turn on digital gauge and zero

FLI structures

Test Method

Form 33H is now completed digitally on a phone or tablet using Dashpivot (Sitemate):

FLI structures

Filepath: Francis and Lewis International Ltd/2300-0235B - Fariers Way/Site

Template ID: FLI Screwpile Test Log

Template Version: 18

Form Version: 2

Screwpile Test Log

Created Tue, 28 Jan 2025, 2:22 PM **Harry Wood**

Date and time of testing: Tue, 28 Jan 2025, 2:22 pm

Tester's name: Harry Wood


Testing Company: FLI Structures

Pile under test

Pile reference and location	Reason for testing	Photo(s)	Document
4 (to be tested 5th)	Requested by FLI Engineers		2300-235-EGA2 - Rev 4 - Harry markup.pdf

Ensure pile being tested can be accurately identified - Include reference to other piles, rail, road, site boundary.

Photos of testing setup



See photos attached at end of PDF

Testing loads

Enter 100% testing load in kN as provided by FLI Engineers	139
--	-----

Page 1

FLI structures

Filepath: Francis and Lewis International Ltd/2300-0235B - Fariers Way/Site

Template ID: FLI Screwpile Test Log

Template Version: 18

Form Version: 2

Method Summary

- 5kN - initial load to tighten everything up, zero measurements and proceed (sufficient time must be allowed here to let the piles & equipment settle, at least 5 minutes, but generally until the displacement gauges show no incremental movement.
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- 50% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
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- If in any case deflection continues to increase under a constant load after the 5mins period then the load should be held for a further 15mins and the cumulative deflection recorded.
- Failure is normally indicated by the pile continuing to deflect under constant load, and the load to the ram has to be constantly 'topped up' as it loses force due to the pile movement.

Test Readings

	Initial Load	Initial Load	50%	50%	100%	100%	150%	150%	100%	100%	50%	50%	0%	0%
Actual Load	5.0 kN	5.0 kN	69.5 kN	69.5 kN	139 kN	139 kN	208.5 kN	208.5 kN	139 kN	139 kN	69.5 kN	69.5 kN	0.00 kN	0.00 kN
Start time	2:22 pm	2:22 pm	2:27 pm	2:27 pm	2:42 pm	2:42 pm	3:02 pm	3:03 pm	3:42 pm	3:42 pm	3:49 pm	3:49 pm	3:55 pm	3:55 pm
Gauge	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0 MINS	4.45	3.32	7.45	6.46	12.21	11.25	24.13	23.82	28.1	27.34	27.1	26.31	14.95	15.66
5 MINS	4.55	3.34	7.87	6.83	13.07	12.17	27.94	27.33	28.66	27.9	26.82	26.02		
10 MINS			7.89	6.85	13.32	12.44	29.31	28.68						
15 MINS					13.46	12.58	29.92	29.23						
20 MINS					13.56	12.68	30.41	29.81						
25 MINS							30.58	29.95						
30 MINS							30.6	29.97						
Final reading for each load step	4.55	3.34	7.89	6.85	13.56	12.68	30.6	29.97	28.66	27.9	26.82	26.02	14.95	15.66

Page 2

FLI structures

Filepath: Francis and Lewis International Ltd/2300-0235B - Fariers Way/Site

Template ID: FLI Screwpile Test Log

Template Version: 18

Form Version: 2

Summary of Results

	Allowed (mm)	Actual (mm) - 1	Actual (mm) - 2	Average of 2 Gauges (mm)	Difference between allowed and actual movement (mm)	Pass / Fail	Comments
TOTAL MOVEMENT AT 50%	8	3.34	3.51	3.425	-4.575	Pass	
TOTAL MOVEMENT AT 100%	15	9.01	9.34	9.175	-5.825	Pass	
TOTAL MOVEMENT AT 150%	25	26.05	26.63	26.34	1.34	Fail	
RESIDUAL MOVEMENT AT END	15	10.4	12.32	11.36	-3.64	Pass	

Tester's comments: Pile was creeping at 150% load, but failed at 15 minutes due to passing the 25mm movement threshold.

CONTRACTORS TEST MONITOR (Name & Comments):

NETWORK RAIL TEST MONITOR (Name & Comments):

Tester's Signature: *HW* Harry Wood, Wed, 29 Jan 2025, 8:32 am

FLI Engineer's Comments:

FLI Engineer's Approval Signature: Not signed yet.

Page 3

Test Method

Step 1: Preload:

- Ensure release valve is closed then pump handle and load to 5kN to take up slack
- Soil under sleepers compresses = load beam moves down
- Pile moves upwards
- Result is loss of load
- To overcome this, the pump will need to be operated continuously to start to maintain the 5kN load
- Take displacement readings every 5 minutes
- As equilibrium is approached the load stabilises, as does the displacement
- Keep going until no significant movement ($<0.10\text{mm}$ for a 5-minute period)
- DO NOT RUSH – leads to higher than expected displacements
- Final reading is the datum (ZERO) value for remainder of load increments
- If using digital gauges, zero them at this point

Test Method

Step 2: 50% Load

- Apply 50% load
- Keep attending to pump to keep load up until equilibrium is reached
- Measure displacement at 5 minute intervals
- Keep going until no further significant movement ($<0.10\text{mm}$ for a 5 minute period)

Step 3: 100% Load

- Repeat Step 3 at 100% load

Step 4: 150% Load

- Repeat Step 4 at 150% load and **maintain the load for at least 30 minutes**
- **Failure = displacement continues unabated load constantly topped up equilibrium not reached.**
- **The Test should be stopped if the displacement exceeds 30mm to avoid completely disturbing the soil.**

Test Method

Step 5: Unloading

- Apply load decrements of 100%, 50% and 0% by carefully opening the release valve, closing at the required load
- Calculate actual displacements on Form 33H
- Compare to acceptance criteria (typically 25mm displacement at 150% and 15mm residual displacement)
- Form 33H to be signed by tester and client's supervisor if present
- Send Form 33H to both FLI and Client.



Key Watchpoint - Load Cylinder Travel

- It is important to monitor the travel of the hydraulic load cylinder as once the maximum travel has been reached, it will no longer apply anymore load and may damage the cylinder
- This occurs when the ground is very weak underneath the sleepers
- Unloading the pile and winding down the nut on top may be required to avoid reaching the max travel



Residual Hazards

Residual Hazard	Activity	Preventive Actions
Slips, trips and falls	All	Survey the work area and plan the task accordingly. Level the area before starting work.
Lifting heavy parts	Set-up and removal	Consider the weight of any object to be moved and use manual means or mechanical lifting equipment as necessary.
Vehicle and plant movement on site	All	Plan the test, cordon off a suitable zone if necessary and set up the test to be facing any possible movements.
Contaminated land	All	Piles are often located adjacent to rail lines or highways. The possibility of contaminated ground exists. Though exposure is minimal, measures should be taken to prevent skin contact with known contaminated soil.
Contact with hydraulic oil and spillages	All	Contact from hydraulic oil can occur due to spillages, leaks or broken hoses and at changeover of equipment. Appropriate measures need to be implemented to reduce exposure and to ensure that spillages are cleaned up. Broken hoses can lead to high pressure oil spray and safety glasses should be worn.
Test beam stability	Testing	Ensure the test assembly is stable before any load is applied and that no parts will fall, causing injury.

Risk Assessments & COSHH

Risk Assessments:

- Testing operations to be covered by a Risk Assessment & Method Statement

COSHH:

- COSHH sheets needed for hydraulic oils

Documentation

Required Documents:

- Method Statement
- Risk Assessment
- FLI pile layout drawing
- Form 33C – Pile Installation Log
- Form 33H – Pile Test Record Sheet

Documentation – Site Drawings

SCREW PILE FOUNDATION

ITEM	DRG No.	PART No.	DESCRIPTION	WT (kg)	QTY
1	193C	193C	PILE CAP TO SUIT Ø193.7 CHS PILES (150 TO FIRST BOLT)	44.0	6
2	193E2.5	193E2.5	Ø193.7 CHS PILE EXTENSION SECTION (1500 B-B)	105.4	6
3	2300-188A-L1	2300-188A-L1	Ø193.7 CHS PILE LEAD SECTION c/w 2 No. Ø550 HELICES	223.0	6
4	-----	-----	M24x260 LG B-N-FW(SHANKED)(GALV)	0.3	96
5	-----	-----	M36x200 LG B-2N-FW(GALV)	0.8	6
6	W127	W127	12 THK WASHER TO SUIT M36 BOLT	0.3	6

TOTAL WEIGHT = 1036.7 kg

MAX FACTORED TENSION (kN)	MAX FACTORED COMPRESSION (kN)	TEST LOAD 150% OF TENSION (kN)	MINIMUM INSTALLATION TORQUE REQ'D (kNm)	MAX TORQUE NOT TO EXCEED (kNm)	PILE LENGTH (m)	RECOMMENDED TORQUE MOTOR
203.3	296.3	152.5	26.4	77.6	4.700	PD-60

↑

PILE TOLERANCES	
HORIZONTAL (PLAN)	±75mm
LEVEL	±3mm
VERTICALITY	±0.5°

DO NOT SCALE IF IN DOUBT ASK

UNLESS OTHERWISE STATED:
 MATERIAL: UNLESS AS PER FULL SPECIFICATION
 FINISH: GALVANIZED TO BS EN ISO 1461
 DIMENSIONS: UNLESS OTHERWISE SPECIFIED
 WELD AS PER BS EN ISO 15613 PART 1
 TOLERANCES:
 CUT LENGTH ± 3mm
 HOLE CIRCLES ± 0.2mm
 ANGULAR CUT ± 0.25°
 FABRICATED ASSEMBLY ± 3mm
 PCD ± 1mm

IDENTIFIED TO EXECUTION CLASS EX22

NON-PREQUALIFIED BOLTS ASSEMBLED TO BS EN 10981-1

NOTES:

- ALL DRAWING NOTES RE FOR GUIDANCE ONLY. REFER TO RELEVANT METHOD STATEMENT FOR INSTALLATION INSTRUCTION.
- BOLTS SHALL BE MADE "SHOULDER TIGHT" ACHIEVABLE BY THE EFFORT OF ONE MAN USING A NORMAL SIZE SPANNER.
- PILES NOT TO BE TERMINATED SHORT EVEN IF DESIGN TORQUE IS REACHED.
- POSITION & ORIENTATION OF PILES ARE TO BE DETERMINED BY CONTRACTOR ON SITE.
- EXCAVATE INSPECTION PITS BY HAND OF SUFFICIENT DIAMETER TO ALLOW CABLE DETECTION EQUIPMENT TO BE CORRECTLY OPERATED AT ITS BASE. THE INSPECTOR PIT SHALL BE ADVANCED AND CABLE DETECTION UNDERGARDEN IN 200MM INCREMENTS TO A DEPTH OF 1M, OR AS OTHERWISE DIRECTED IN THE RELEVANT METHOD STATEMENT. ONCE THE PILE IS INSTALLED, BACKFILL ANY VOIDS AROUND THE PILE WITH SITE WORN GRANULAR MATERIAL OR IMPORTED TYPE 1 MATERIAL USING A HAND TAMPER. BACKFILL MATERIAL IS TO BE COMPACTED IN LAYERS OF NO MORE THAN 200MM AND UNTIL NO FURTHER COMPACTION BY HAND TAMPER CAN BE ACHIEVED. IF A PILE CAP IS FITTED THEN ADJUST THE PIT DIAMETER ACCORDINGLY TO ALLOW COMPACTION.
- DESIGNS ARE CARRIED OUT IN GOOD FAITH BASED ON THE GROUND INVESTIGATION DATA PROVIDED BY THE CLIENT. RISKS ARISING FROM UNFORSEEN GROUND CONDITIONS FALL TO THE CLIENT.

DATE	20/1/22	SCALE	1:1	FILE REF	2300188A
DRW	RS	CHKD	HN	APPD	TCB
CUSTOMER	WHP TELECOM LTD				
ORDER NO.	N/A				
TITLE	SCREW PILES FOR 25m 25m T3A LATTICE TOWER AT SITE: LAND OFF SPRING LANE				
DRG No.	2300-188A-EGA1				

Documentation – Micropiles too!

MICROPILE SPECIFICATION
40mm MICROPILE BAR
CARBIDE DRILL BIT

MAX FACTORED COMPRESSION (kN)	MAX FACTORED TENSION (kN)	TENSION TEST LOAD (kN)	PILE LENGTH (m)
131.4	102.3	85.3	7.5

FRAME CONNECTION DETAIL

2 NUTS
ANGLE ADAPTER
THRUST WASHER
FRAME BOOT (INDICATIVE)

DO NOT SCALE
IF IN COLOUR ASB

ALL WELDS TO BE CONTINUOUS
IF "WELD" PRINT

REMOVE ALL SHARP
EDGES AND BURRS

ENSURE ALL HARD STAMP CHARACTERS
ARE CHECKED AFTER GALVANIZING

UNLESS OTHERWISE STATED:-

MATERIAL - GRADE AS PER FULL TO FORM 110
FINISH - GALVANIZED TO BS EN ISO 1461
DIMENSIONS - MILLIMETRES (mm)
WELDING - AS PER LATEST EDITION AWSER W
TOLERANCES:

CUT LENGTHS + 0.5mm
HOLE CENTRES + 0.5mm
ANGULAR CUT + 0.5mm
FABRICATED ASBY + 0.5mm
PCD + 0.5mm

CERTIFIED TO REVOLUTION CLASS EXC3

NON-PRELOADED BOLTING ASSEMBLY TO BS EN 15046-1

NOTES:-

FLI structures
FRANCIS & LANE INTERNATIONAL LTD.
TEL: +44 (0)1904 700000 WWW: WWW.FLI-STRUCTURES.CO.UK

DATE: 05/05/22 SCALE: N/A TEL REF: 2300195A
DWN: HN DWN: RS APPD: RS
CUSTOMER: WALDON
ORDER NO: N/A
TITLE: MICROPILES FOR 20m AT S1300 TOWER AT SITE: WHITE KNIGHT
DWF NO: 2300-195A-ED-02

NOT FOR CONSTRUCTION

Documentation – Pile Installation Log (Form 33C)

Filepath: Francis and Lewis International Ltd/R122/02 - Cambridge/Site Template ID: PD60-03 Form 33C Template Version: 23 Form Version: 4

PD60-03 Screwpile Install Form

Created Mon, 09 Dec 2024, 11:58 AM (UTC+00) Hamish Norman

Select Site: **CA836**

Pile Number/Ref: CA836 - 1

Pile Size	193.7 x 12.5 CHS
Pile Length (m)	7.4
Helix Configuration	550 550
Installation Angle	0
Target Torque (kNm)	17.60
Maximum Torque (kNm)	78.50

Installation Company	Piling Team Leader	Recorded By	Installation Date
COWAP	Rob Warrington	Rob Warrington	Sat, 26 Oct 2024

Installation Input

Depth (m)	Pressure Gauge 1 (bar)	Pressure Gauge 2 (bar)	Pressure Difference (Bar)	Torque (kNm)	Comments
0.50	20.00	60.00	40.00	3.98	
1.00	20.00	60.00	40.00	3.98	
1.50	20.00	80.00	60.00	8.43	
2.00	20.00	100.00	80.00	12.88	
2.50	20.00	130.00	110.00	19.55	
3.00	20.00	140.00	120.00	21.77	
3.50	20.00	160.00	140.00	26.22	
4.00	20.00	180.00	160.00	30.67	
4.50	20.00	170.00	150.00	28.44	
5.00	20.00	180.00	160.00	30.67	RRV Max output
5.50	20.00	180.00	160.00	30.67	
6.00	20.00	180.00	160.00	30.67	
6.50	20.00	180.00	160.00	30.67	
7.00	20.00	180.00	160.00	30.67	
7.50	20.00	180.00	160.00	30.67	

Refer to completed logs to determine which pile to test.

Filepath: Francis and Lewis International Ltd/R122/02 - Cambridge/Site Template ID: PD60-03 Form 33C Template Version: 23 Form Version: 4

Position checks and Sign off:

Have you checked pile top level with respect to a datum point	Yes	Value:
Have you checked top of pile distance above ground level	Yes	Value:
Have you checked final pile position is within the tolerance specified in the GA drawing	Yes	Value:
Have you checked pile orientation won't affect the connection to the structure above	Yes	Value:

Record any agreed changes

Pile Team Leader's comments: Digitally signed on behalf of Rob Warrington

FLI Supervisor / Piling Team Leader Signature: *[Signature]* Harry Wood, Tue, 10 Dec 2024, 8:06 am

Customer representative to check levels and tolerance of pile and sign to confirm acceptance.

Customer Representative Signature: Not signed yet.

FLI Engineer's Comments: Pile reached Torque and was within tolerance so, OK.

FLI Engineer's Approval Signature: *[Signature]* Hamish Norman, Mon, 09 Dec 2024, 11:58 am

Photo(s) of pile layout indicating which pile is being installed + Photos of installed pile

FLI structures Documentation – Pile Testing Log (Form 33H)

FLI structures
Filepath: Francis and Lewis International Ltd/2300-0235B - Fariers Way/Site
Template ID: FLI Screwpile Test Log
Template Version: 18
Form Version: 2

Screwpile Test Log

Created Tue, 28 Jan 2025, 2:22 PM
Harry Wood


Date and time of testing: Tue, 28 Jan 2025, 2:22 pm
Tester's name: Harry Wood
Testing Company: FLI Structures

Pile under test

Pile reference and location	Reason for testing	Photo(s)	Document
4 (to be tested 5th)	Requested by FLI Engineers		2300-235-EGA2 - Rev 4 - Harry markup.pdf

Ensure pile being tested can be accurately identified - Include reference to other piles, rail, road, site boundary.

Photos of testing setup



See photos attached at end of PDF

Testing loads

Enter 100% testing load in kN as provided by FLI Engineers	139
--	-----

Page 1

Input site and pile data here

Summarise displacements and Pass/Fail here

Page 2

FLI structures
Filepath: Francis and Lewis International Ltd/2300-0235B - Fariers Way/Site
Template ID: FLI Screwpile Test Log
Template Version: 18
Form Version: 2

Method Summary

- 5kN - initial load to tighten everything up, zero measurements and proceed (sufficient time must be allowed here to let the piles & equipment settle, at least 5 minutes, but generally until the displacement gauges show no incremental movement.
- 50% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
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- 100% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
- 50% of working load - measure deflection under load, if no further deflection (< 0.10mm) is noted after 5mins proceed to next load
- 0% of working load - measure recovered deflection
- If in any case deflection continues to increase under a constant load after the 5mins period then the load should be held for a further 15mins and the cumulative deflection recorded.
- Failure is normally indicated by the pile continuing to deflect under constant load, and the load to the ram has to be constantly 'topped up' as it loses force due to the pile movement.

Test Readings

	Initial Load	Initial Load	50%	50%	100%	100%	150%	150%	100%	100%	50%	50%	0%	0%
Actual Load	5.0 kN	5.0 kN	69.5 kN	69.5 kN	139 kN	139 kN	208.5 kN	208.5 kN	139 kN	139 kN	69.5 kN	69.5 kN	0.00 kN	0.00 kN
Start time	2:22 pm	2:22 pm	2:27 pm	2:27 pm	2:42 pm	2:42 pm	3:02 pm	3:03 pm	3:42 pm	3:42 pm	3:49 pm	3:49 pm	3:55 pm	3:55 pm
Gauge	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0 MINS	4.45	3.32	7.45	6.46	12.21	11.25	24.13	23.82	28.1	27.34	27.1	26.31	14.95	15.66
5 MINS	4.55	3.34	7.87	6.83	13.07	12.17	27.94	27.33	28.66	27.9	26.82	26.02		
10 MINS			7.89	6.85	13.32	12.44	29.31	28.68						
15 MINS					13.46	12.58	29.92	29.23						
20 MINS					13.56	12.68	30.41	29.81						
25 MINS							30.58	29.95						
30 MINS							30.6	29.97						
Final reading for each load step	4.55	3.34	7.89	6.85	13.56	12.68	30.6	29.97	28.66	27.9	26.82	26.02	14.95	15.66

Page 3

FLI structures
Filepath: Francis and Lewis International Ltd/2300-0235B - Fariers Way/Site
Template ID: FLI Screwpile Test Log
Template Version: 18
Form Version: 2

Summary of Results

	Allowed (mm)	Actual (mm) - 1	Actual (mm) - 2	Average of 2 Gauges (mm)	Difference between allowed and actual movement (mm)	Pass / Fail	Comments
TOTAL MOVEMENT AT 50%	8	3.34	3.51	3.425	-4.575	Pass	
TOTAL MOVEMENT AT 100%	15	9.01	9.34	9.175	-5.825	Pass	
TOTAL MOVEMENT AT 150%	25	26.05	26.63	26.34	1.34	Fail	
RESIDUAL MOVEMENT AT END	15	10.4	12.32	11.36	-3.64	Pass	

Testers comments: Pile was creeping at 150% load, but failed at 15 minutes due to passing the 25mm movement threshold.

CONTRACTORS TEST MONITOR (Name & Comments):

NETWORK RAIL TEST MONITOR (Name & Comments):

Tester's Signature: *HW* Harry Wood, Wed, 29 Jan 2025, 8:32 am

FLI Engineer's Comments:

FLI Engineer's Approval Signature: Not signed yet.

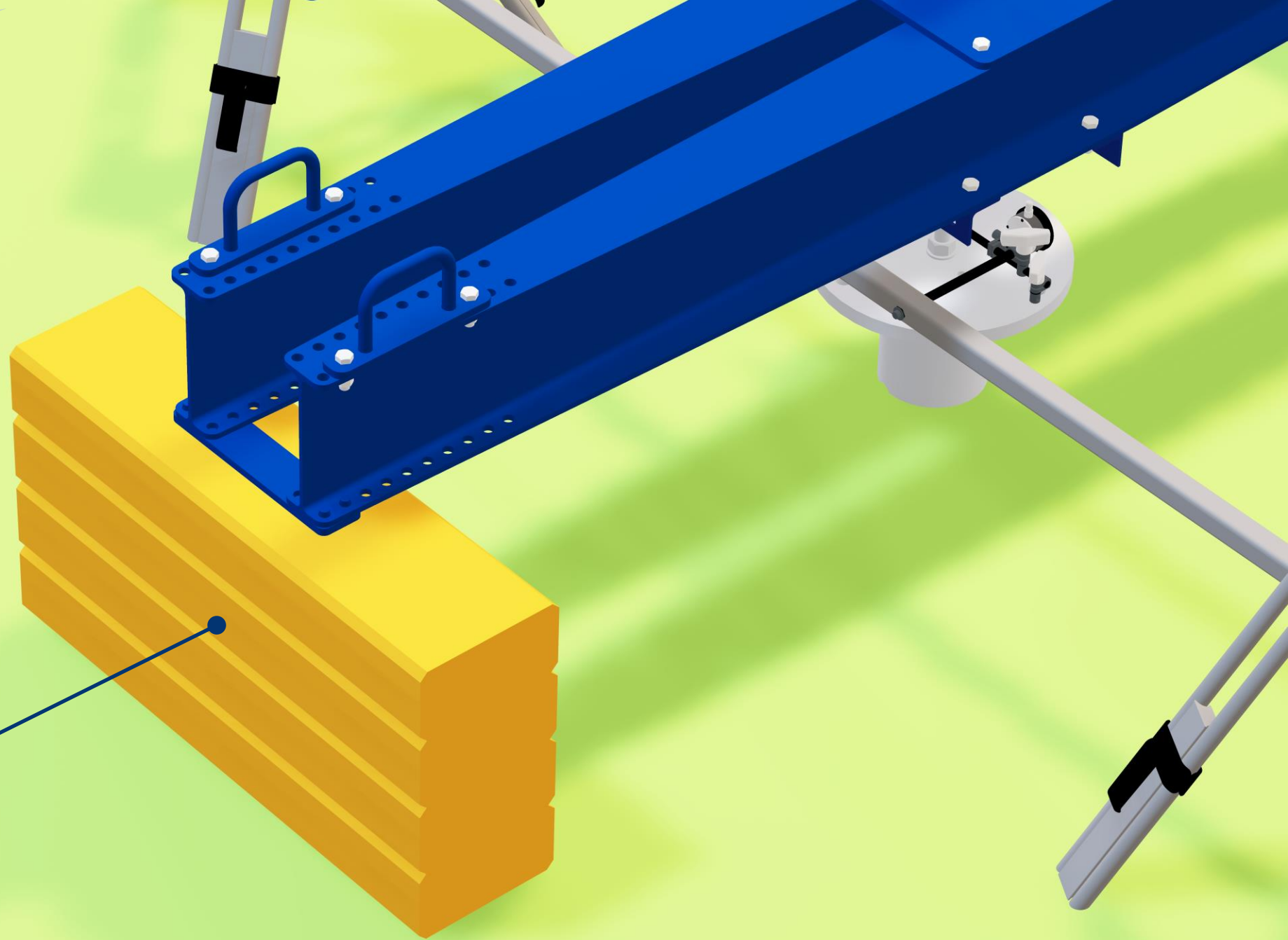
Record any comments and sign off here

Record displacements during each step here

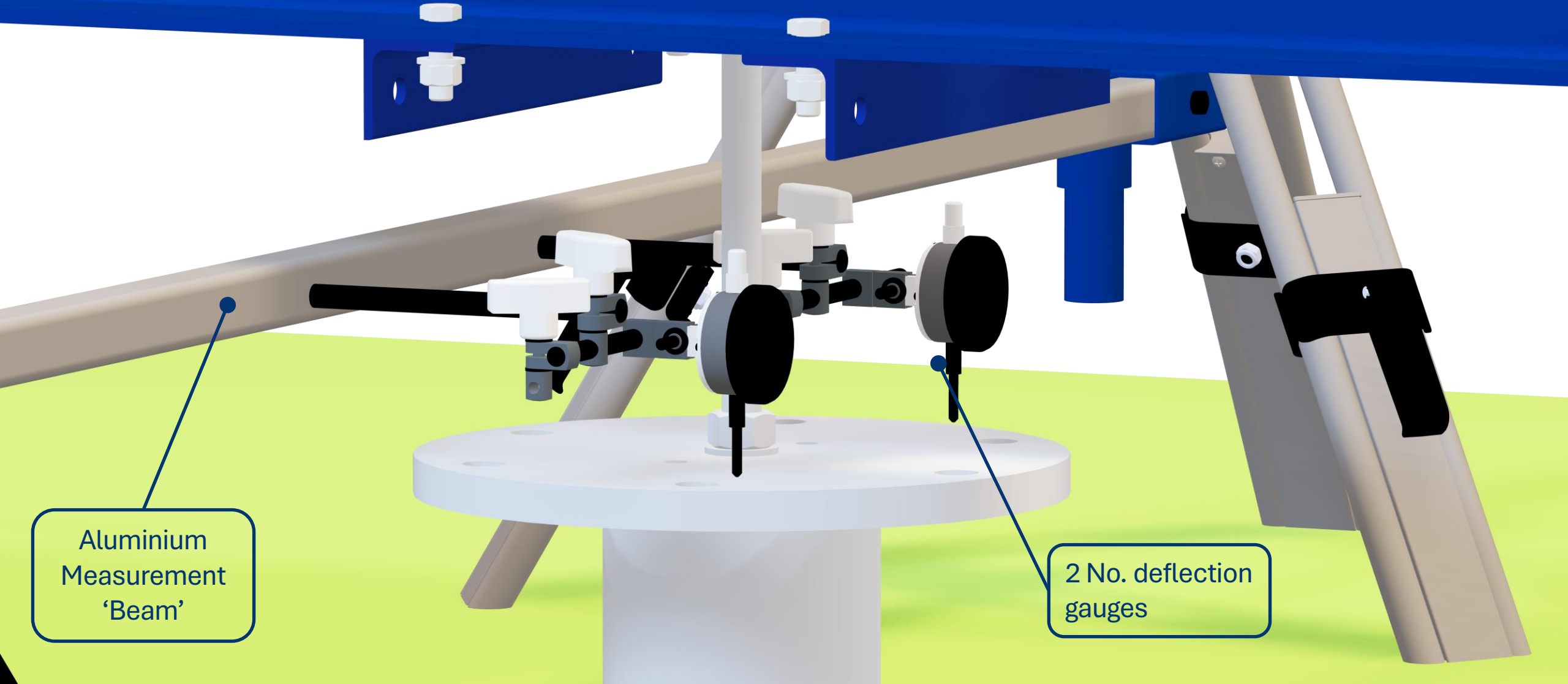
FLI structures

Screw Pile Testing Course





Timber sleepers to transfer reaction loads to the ground

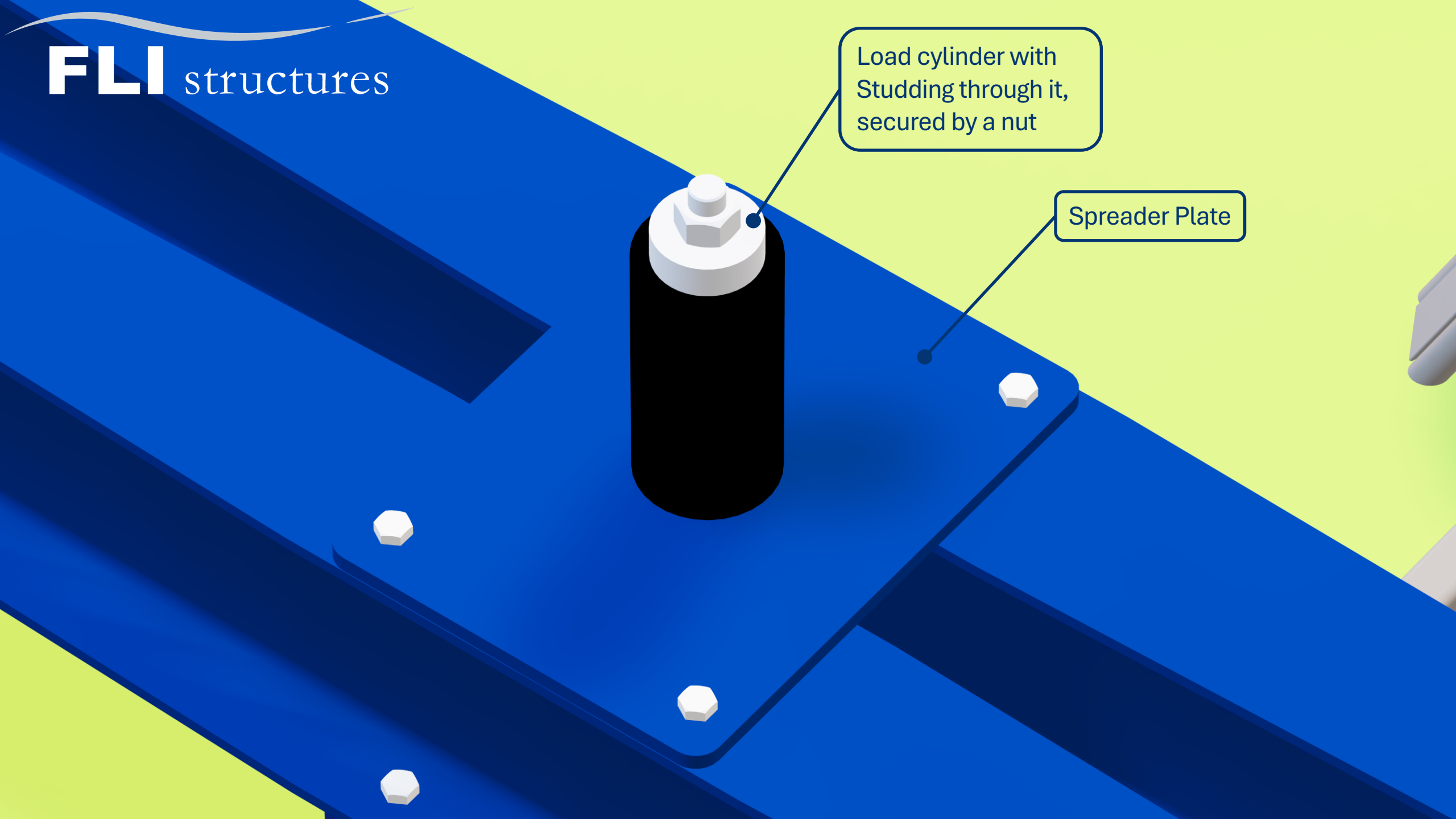


Aluminium
Measurement
'Beam'

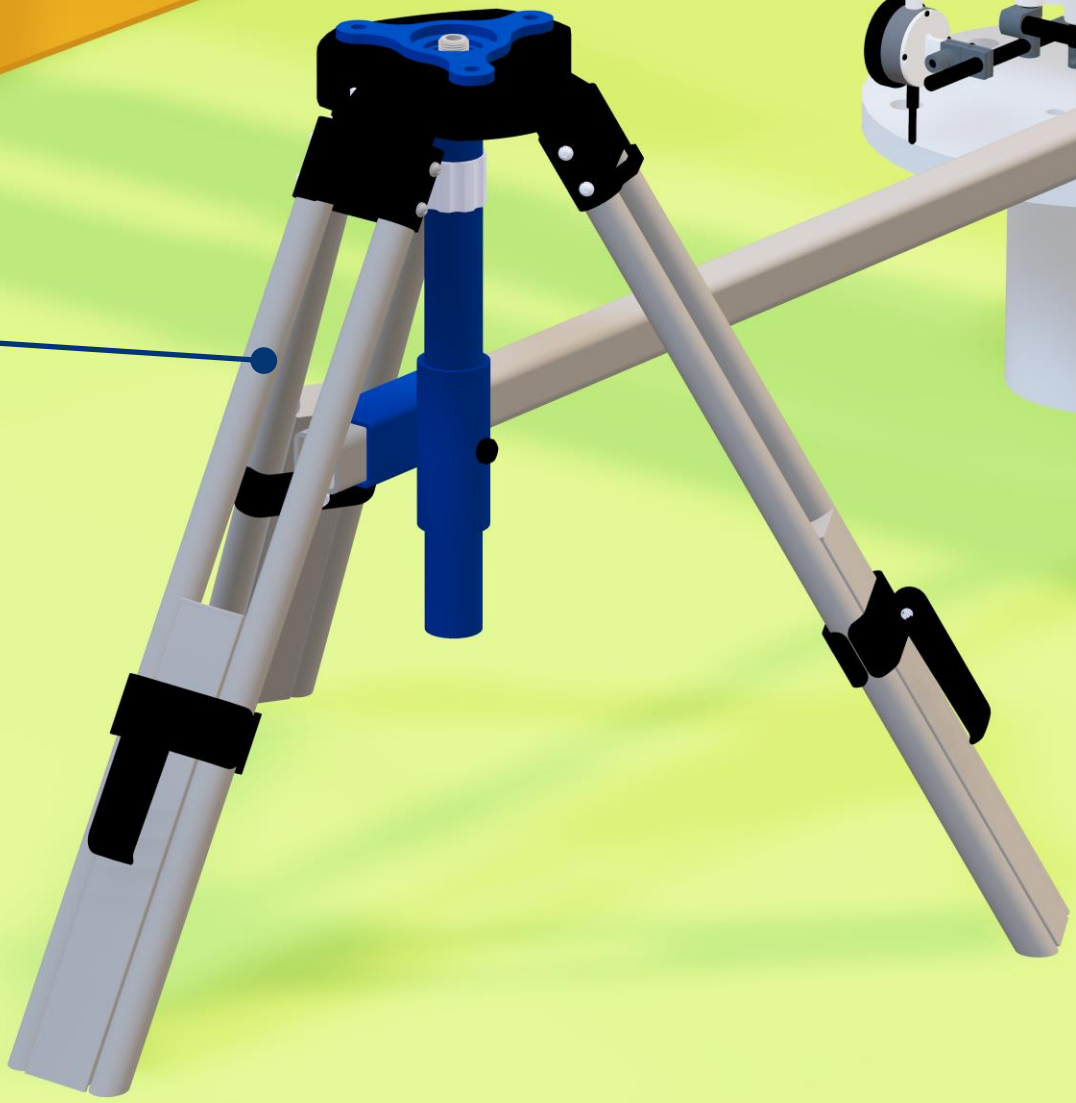
2 No. deflection
gauges

Load cylinder with
Studding through it,
secured by a nut

Spreader Plate



Tripods for support measurement beam



FLI structures

Bolt on handles
for easy carrying

2 No. Load Beams
~50kg each

