

ILLUSTRATED TECHNICAL HANDBOOK 06

GROUND SCREWS & HELICAL PILES PROCUREMENT GUIDE

Site inputs, actual assemblies, testing and installation records: from a defined enquiry to counted components and usable evidence.



AI-generated product illustration; not a documentary factory or shipment photograph.

METDAX INDUSTRIAL SUPPLY

MDX-TP-06 | VERSION 1.0 | 13 OCTOBER 2026

54 pages / 3 teaching cases / 6 fillable worksheets

START HERE

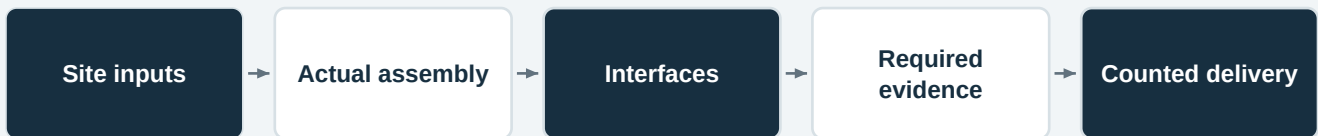
Buy an identified foundation package

A practical guide to ground screws, helical pile components and the records around them.

A ground screw or helical pile enquiry connects a physical product to a particular site, supported structure, installation system and review process. A length, photograph or nominal load rating cannot describe all of those relationships. This guide helps buyers collect the inputs, identify the purchased assembly, plan required evidence and reconcile the parts and records that arrive.

The handbook follows a purchase from site inputs through shaft, head, joint and driver interfaces to test planning, installation records, commercial review and delivery. Three two-page teaching cases demonstrate mixed head quantities, extension inventory and a trial-record mismatch. Six fillable worksheets capture real project references, accountable parties and unresolved questions.

The product pictures are existing AI-generated METDAX concepts. Original diagrams and fictional cases explain information and quantity relationships. They do not establish a product rating, an installation setting or a foundation design. Engineering decisions, test execution and site acceptance require the actual selected documents and responsible project teams.



Original buyer workflow. Project requirements determine the actual review and release process.

Reading routes

Product and interfaces: pages 12-21. Testing and installation records: pages 22-32. Procurement and delivery: pages 33-38. Teaching cases: pages 39-44. Fillable worksheets: pages 45-50.

CONTENTS / READING PATHS

Find the product, site input or evidence review

Use the diagrams for orientation and the worksheets for your actual controlled project package.

Start Here	02
Scope, concept illustrations and reading routes	
01 Scope And Responsibility	04
Physical products, assigned work and document roles	
02 Site Inputs	07
Geotechnical records, reactions, survey, exposure and open inputs	
03 Product Architecture	12
Screws, leads, helices, materials, extensions and finish	
04 Head, Joint And Driver Interfaces	18
Flanges, inserts, caps, couplers and actual equipment match	
05 Trial And Test Planning	22
Objectives, directions, methods, data and responsible interpretation	
06 Installation Records	28
Stable marks, torque, units, geometry, events and dossiers	
07 Rfq And Change Control	33
Itemized enquiries, provisional quantities and accepted differences	
08 Quality, Packing And Receiving	36
Inspection, part maps, defined sets and actual disposition	
09 Teaching Cases	39
Mixed heads, extension inventory and record-direction review	
10 Fillable Worksheets	45
Six editable input, assembly, interface, test, log and receipt forms	
11 Quick Reference	51
Precise terms and the complete pre-release package	
12 Reference Register	52
Public primary sources and their actual document roles	
13 Methods And Image Policy	53
Concept assets, declared case inputs and arithmetic boundaries	
Metdax Next Step	54
Prepare a defined ground-foundation enquiry	

01 / SCOPE AND RESPONSIBILITY

Describe the product by its physical architecture

Ground-screw and helical-pile names can overlap; a controlled drawing resolves the offer.

A ground screw is commonly illustrated as a tubular steel shaft with a tapered lower region and screw thread, using an integral or separate head connection. A helical pile assembly is commonly illustrated with one or more discrete helix plates on a lead section, with extensions and a selected top connection. These descriptions orient the buyer; they are not a universal classification rule or a code determination.

Request the actual shaft section, thread or helix configuration, end geometry, head and joint arrangement. A round shaft and a square shaft are different physical objects, even when a brochure uses the same family name. A quoted nominal length may refer to one piece or to an assembled system. Give each variant a buyer item and drawing revision.

Separate the product family from its proposed use. Solar tables, equipment frames, small structures and other applications can require different reactions, geometry and evidence. Identify the application without assuming that suitability for one supported structure establishes suitability for another. Match the proposed product to the actual project review.



Threaded tubular ground-screw concept



Discrete-helix pile assembly concept

AI-generated product illustrations. No product approval or inspected-lot evidence is implied.

Identity first

Use a part or model identity and current drawing to define the physical deliverable. Do not purchase a foundation only by its commercial family name.

01 / SCOPE AND RESPONSIBILITY

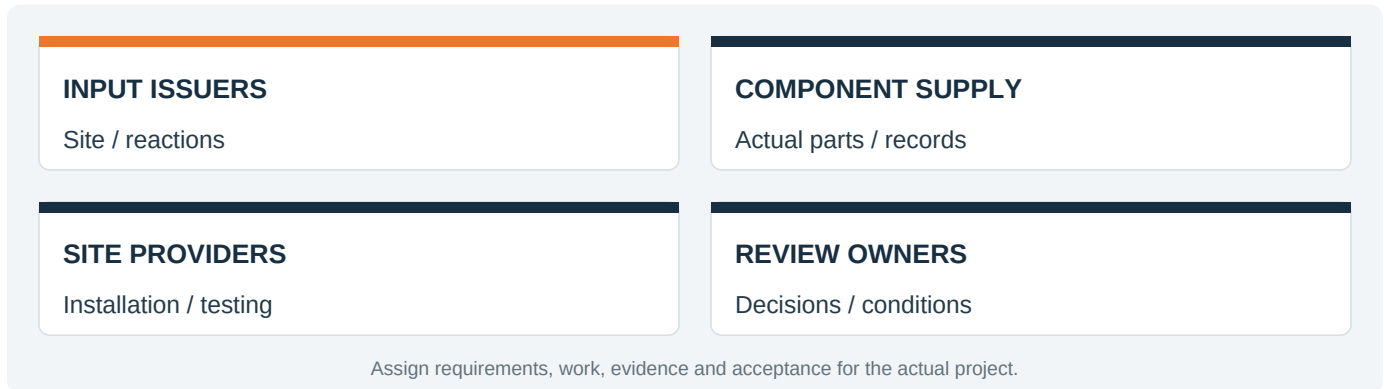
Assign supply, site work and engineering decisions

A component quotation needs explicit boundaries around services and approval.

Buying a lead section, extension or screw body does not automatically buy geotechnical investigation, foundation design, installation equipment, testing or site acceptance. List every requested physical object and service. Name the party responsible for providing the requirement, performing the work, producing its record and accepting the result. One organization can hold several roles if the agreement identifies them.

The buyer should coordinate a current attachment register. The responsible engineering teams supply the site and structural basis; the proposed supplier identifies the offered parts, material, preparation and records. Installation and testing providers supply the relevant equipment and work records within their agreed scope. Record the actual role assignment rather than inferring it from a company logo.

At an interface, identify both providers and the handover document. A foundation head connecting to another supplier's frame needs the mating detail and a resolved load-path basis. A driver adaptor needs its machine-side identity as well as its product-side geometry. Keep unresolved responsibility visible in the enquiry and accepted offer.



Work object	Record the agreed responsibility
Site / structural inputs	Issuer, revision, location groups and engineering reviewers
Purchased components	Actual identities, quantities, included operations and records
Installation / testing	Performing party, approved documents and required reporting
Acceptance / handover	Decision owner, conditions and closure reference

01 / SCOPE AND RESPONSIBILITY

Give each document its proper review role

A material record, product evaluation and site test answer different questions.

Start with the governing project and jurisdictional requirements. Identify the selected product documents and the installation and test requirements that apply to it. A material certificate can support material identity and specified results for a lot. It cannot, by itself, demonstrate the performance of the installed foundation in a particular site.

ICC-ES lists AC308(24) for helical pile systems and devices. A published acceptance criterion is a framework for evaluation; it is not a product approval issued to every seller of a similarly named part. An actual evaluation report names a report holder, products, scope and conditions. Review those identities and the current official report against the proposed assembly.

A test method defines how the relevant test is conducted and reported within its scope. It does not automatically define the project's acceptance result or replace an engineer's interpretation. Keep product evaluation, project design, factory inspection, field measurements and final disposition as separate linked entries. Resolve contradictions before treating an attachment as accepted.

PROJECT BASIS	Site, actions and governing requirements
PRODUCT EVIDENCE	Named objects, scope and conditions
MANUFACTURING RECORDS	Material, geometry, fabrication and treatment
SITE RECORDS / DECISION	Installation, tests and engineering disposition

Documents are linked by actual identity; one role does not replace another.

Evidence question

For every document, record what it demonstrates, which actual object it covers and who accepts its use on this project.

Source scope: S01, S02, S03, S04, S05 | Reference register: page 52

02 / SITE INPUTS

Build a site and geotechnical input register

A soil label is not a foundation selection or capacity statement.

Collect the current site investigation and geotechnical recommendations relevant to the proposed foundation locations. Identify the investigation area, dates, referenced exploration points, ground profile, groundwater information and limitations. Preserve the original report and its location map. The responsible project team determines whether the available information represents the actual installation area.

Use a register to connect site groups to the applicable documents. Distinguish an existing report, a planned investigation and an unresolved assumption. A general description such as sand, clay or fill lacks the project-specific information needed to decide foundation behavior. A nearby project's report cannot be substituted merely because the surface appearance looks similar.

Ask the responsible reviewer to identify missing information and the required next step. A preliminary supplier discussion can identify product geometry and commercial options while site inputs are incomplete, but the offer should state that basis. When a revised investigation changes a site group, update its product, trial and installation document links rather than only adding a new PDF to a folder.

INVESTIGATION Actual area / limitations	LOCATION GROUP Current marks / survey	REVIEW STATUS Applicable / open input
---	---	---

A broad soil label does not establish a foundation choice or capacity.

Register entry	Information to retain
Report and area	Issuer / revision / surveyed location group
Investigation coverage	Exploration references and stated limitations
Ground / groundwater	Applicable report sections and responsible interpretation
Open input	Required action, owner and decision date

Source scope: S06 | Reference register: page 52

02 / SITE INPUTS

Request support reactions with directions and references

A single headline load leaves the foundation enquiry incomplete.

The structural team should identify the required support reactions, their directions, combinations, reference locations and applicable design basis. Compression, uplift and lateral demand are distinct inputs; moments and load eccentricity may also matter to the selected head and foundation arrangement. The purchasing schedule should point to the issued reaction document rather than recreate an unreviewed calculation.

Record whether supplied values are preliminary or released, which support marks they represent and how the engineering team defines them. Do not mix service-level and factored values, or maxima from incompatible combinations, into one supplier line. A buyer can identify a missing label without choosing the governing design combination.

ASCE/SEI 7-22 provides a structural-load framework, and the ASCE Hazard Tool provides location and edition-dependent hazard inputs. Those sources do not supply a site-specific ground-screw capacity. Preserve the actual project basis, locally adopted requirements and responsible engineering interpretation. A product offer must address the selected geometry and required evidence within that basis.

COMPRESSION



TENSION



LATERAL



Direction concepts only: no applied load, apparatus or acceptance value is assigned.

Useful attachment

A controlled support-reaction schedule should identify the support marks, coordinate system, units, combinations, status and issuing reviewer.

Source scope: S07, S08 | Reference register: page 52

02 / SITE INPUTS

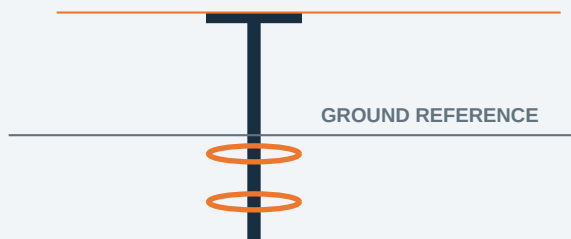
Coordinate survey, elevations and installation constraints

Position, datum and access information must travel with the foundation schedule.

Link each support or site group to the current survey and layout. Retain the coordinate reference, ground-level basis, required head or cut-off elevation and any inclination specified by the engineering documents. Different teams must use the same datum. An assembly length measured in the workshop cannot identify its final head elevation without the relevant site references.

Collect the project's utility records, clearance requirements, access arrangements, working-platform information and restrictions that affect the proposed work. Give the appropriate installation provider those documents for review. The handbook supplies an information checklist; it does not authorize work near utilities or define a safe equipment position.

Document an inaccessible location or a proposed shift as a change request. Moving a foundation to accommodate equipment can affect the supported structure, foundation group or site assumptions. Keep the original position, proposed position, affected details and responsible decision. Update the released location schedule after the accepted change so that supply, installation and records use the same marks.



Head / cut-off elevation: common datum
 Embedment: defined site reference points
 Assembled length: actual connected geometry

Reference-point concept only. No elevation, embedment depth or engineering length is specified.

Input	A traceable reference
Plan location	Support mark, coordinates and controlled layout
Vertical geometry	Ground, cut-off and head elevations with one datum
Constraints	Utility / access / clearance / work-area documents
Changed position	Engineering disposition and revised location record

02 / SITE INPUTS

Specify exposure and finish inputs before comparing offers

Appearance alone cannot establish corrosion protection or service life.

Identify the environmental and service requirements supplied by the responsible project teams. Soil and groundwater information, above-ground exposure, contact with other materials and the required life basis can affect the selected protection system and detailing. Record the actual requirement and its source; avoid deriving a coating choice from a broad soil name or a generic catalogue photograph.

Define the selected material, finish system, covered surfaces, processing sequence and inspection basis in the enquiry. Include the thread or helix, inside or outside surfaces where applicable, head, joint and hardware. Clarify the condition required after fabrication, shipment and any accepted site preparation. A visual silver finish is not evidence of a particular coating specification.

The American Galvanizers Association distinguishes the role of ASTM A123 product requirements from ASTM E376 measurement guidance. A gauge reading must be tied to the selected product acceptance basis and required measurement practice. This guide assigns no universal coating thickness, corrosion allowance or service-life rating. Retain the accepted treatment and repair documents for the actual order.

PROJECT EXPOSURE

Actual source / requirements

PRODUCT TREATMENT

Selected surfaces / sequence

INSPECTION BASIS

Actual acceptance / method

Appearance and a single gauge number do not establish protection life.

Compare the same scope

An offer for one treated component is not the same as an offer for the complete assembly and its defined hardware. Identify exclusions and accepted repair responsibility.

Source scope: S11 | Reference register: page 52

02 / SITE INPUTS

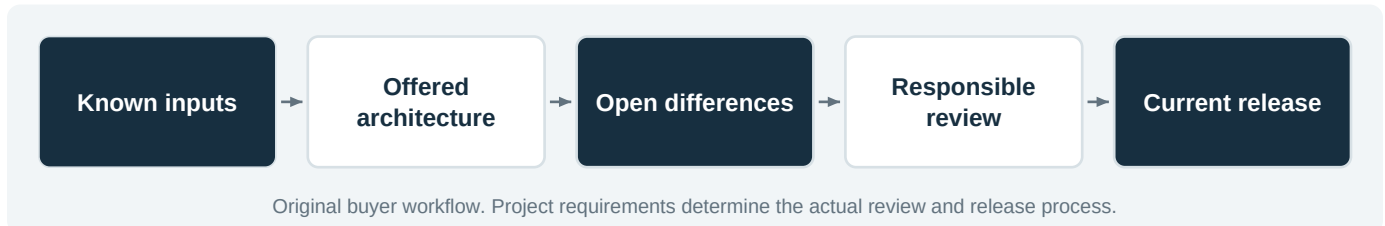
Use an input matrix for a preliminary product discussion

A useful enquiry can expose unknowns without pretending that they are settled.

Send the available layout, site records, reactions, interface drawings and requested delivery basis. Separate confirmed requirements from provisional quantities and unanswered questions. If the current assembly is undecided, ask the proposed supplier to identify the offered architecture, assumed interfaces and information needed to complete its offer. Keep that response linked to the enquiry revision.

Do not rank alternatives only by cost per screw or nominal length. Compare the same complete-set contents, material, treatment, available records, installation interfaces and commercial boundaries. If an offer changes from an integral head to a loose insert, its physical quantities and responsibilities change even if the advertised foundation family stays the same.

Record a status for each decision: input received, proposal identified, review pending, difference accepted or released for purchase. These are document-control statuses, not foundation performance grades. Give every unresolved item an owner and required source. Release an actual order only against the agreed current package and its recorded conditions.



Question	What the enquiry should show
Where / for what?	Site groups, supported structure and location schedule
What physical object?	Actual shaft, head, joints, hardware and driver boundary
Which evidence?	Product, material, test and installation document roles
What remains open?	Named information, decision owner and status

03 / PRODUCT ARCHITECTURE

Define the ground-screw body and thread geometry

Identify the actual product rather than measuring an illustrative picture.

Use the controlled model or drawing to specify the shaft section, overall piece length, tube dimensions, lower-end geometry, thread configuration and top connection. Identify the datum and method used for any requested dimensional inspection. The overall length of a single screw body is a supply dimension; its installed embedment is a separate site measurement.

A tapered threaded region, welded flange or internal insert arrangement must be described by the actual product documents. Record whether dimensions refer to raw material, a completed fabricated part or a coated condition. A catalogue image can help locate the feature to ask about, but it cannot establish its wall thickness, tolerances, steel grade or load rating.

Where multiple variants are required, give each a separate line. Keep the quantity, finish and required records attached to that line. Avoid purchasing an unspecified equivalent screw because its photographed thread looks similar. Ask the proposed supplier to identify every offered difference and the document supporting the revised configuration.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Shaft and piece identity
- 2 Thread / lower-end geometry
- 3 Actual top connection
- 4 Material / finish records

Product identifier

A useful screw line names the actual drawing or model revision, physical unit, completed geometry, selected treatment and quantity.

03 / PRODUCT ARCHITECTURE

Identify the helical lead section as an assembly object

Shaft type, helix arrangement and connection ends belong on the same record.

A helical lead section contains the lower foundation geometry and one or more helix plates in the selected arrangement. Record the shaft section, piece length, helix identities, arrangement and connection ends from the actual drawing or product record. Round-shaft and square-shaft designs need their own defined components and interfaces; do not treat them as automatically interchangeable.

The same nominal shaft length can accompany different helix arrangements or top joints. Give the lead a stable part identity and distinguish it from an extension. If the offered part uses a different shaft, plate arrangement or joint, preserve that difference for the responsible product and project review before updating the BOM.

State which dimensions and fabrication records are required at delivery. A completed lead is not fully described by a raw steel certificate. The purchase package should connect material identity with the fabricated object, required inspection and selected finish. Installation and design suitability are reviewed against the actual assembly and site documents.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Round or square shaft
- 2 Lead-section identity
- 3 Discrete helix arrangement
- 4 Joint and top references

Variant control

Identify the lead, every extension type, joint set and head separately, then link them to the intended assembly.

03 / PRODUCT ARCHITECTURE

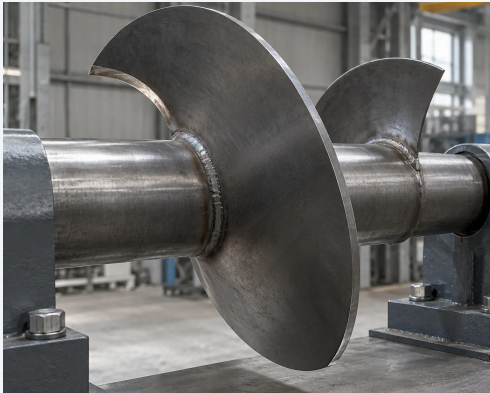
Keep helix configuration and fabrication requirements explicit

Plate count or diameter alone does not establish foundation behavior.

Use the selected drawing to identify each helix plate, its geometry, arrangement and attachment to the shaft. Request the actual dimensional and fabrication requirements applicable to that product. The buyer's task is to preserve the controlled configuration and evidence, not to derive a bearing capacity from plate area or visual resemblance.

Clarify whether a quoted plate or helix dimension represents a nominal product designation or a required measured dimension, and retain the applicable tolerances and inspection method. Changes to plate geometry, shaft configuration or fabrication can affect product identity and the applicability of previously reviewed records. Record a proposed substitute as a difference rather than erasing the original requirement.

Inspection access should be considered with the fabrication and coating sequence. Identify which features require checking before treatment, which are measured on the completed part and which records must follow the item. A generic workshop picture demonstrates none of those checks. Use actual lot and part references when reviewing the supplied evidence.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Actual plate geometry
- 2 Arrangement on selected shaft
- 3 Attachment / drawing revision
- 4 Inspection and lot linkage

Controlled feature	Supplier response
Helix configuration	Actual drawing / model identity and offered match
Fabrication requirement	Applicable operation and inspection reference
Proposed difference	Affected identity, supporting record and review status

03 / PRODUCT ARCHITECTURE

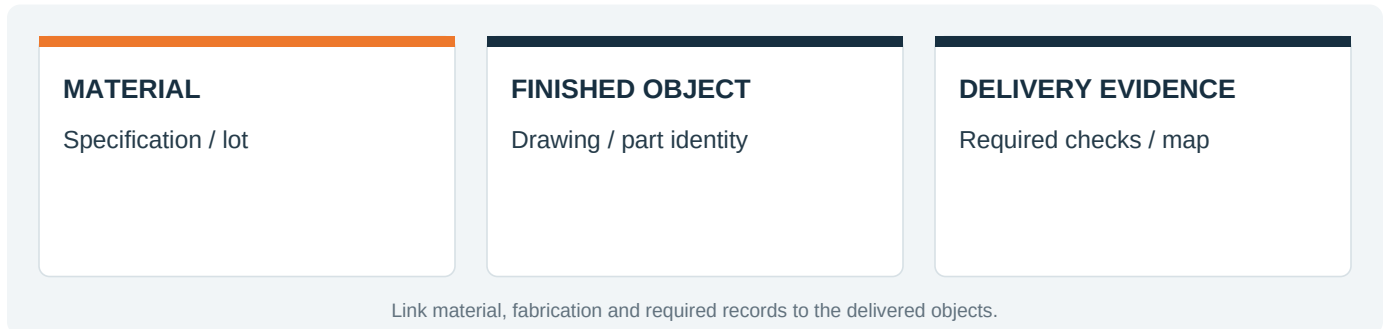
Purchase material and completed geometry together

Grade, wall, plate and section requirements need an item-level identity map.

State the selected material specification and grade for each part, with the required edition or project reference. Identify the shaft section and dimensions, plate and head requirements, and any specified condition or preparation. A single steel grade written at the top of an enquiry does not necessarily define all dissimilar parts and hardware in an assembly.

Request the required material and inspection records with their heat, lot or part links. If a proposed supplier offers a different specification, retain both the required and offered designations and the relevant technical documents for review. Similar chemical descriptions or strength numbers do not automatically establish equivalence between product forms and standards.

Define what a reported measurement represents. Wall thickness, plate thickness and completed hole geometry are different checks and may use different references or stages. A material test record does not resolve a missing finished dimension. Keep manufacturing inspection, product evaluation and project acceptance entries distinct so that a missing check cannot hide behind a large certificate bundle.



Part family	Record the actual requirement
Shaft / screw body	Material specification, section, dimensions and lot
Helix / head / bracket	Plate or formed-part identity and completed geometry
Joint / hardware	Matched part identities, defined set and selected finish
Evidence map	Material / inspection records linked to delivered objects

03 / PRODUCT ARCHITECTURE

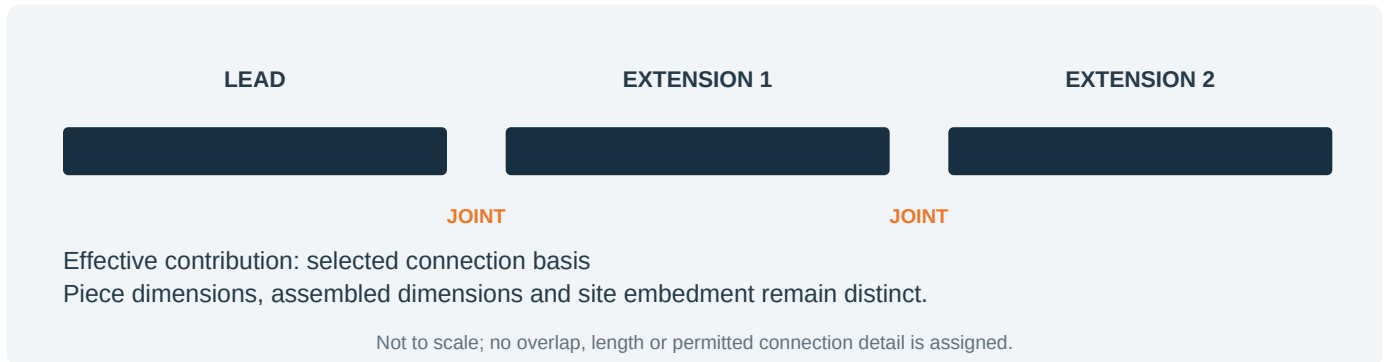
Separate pieces, assemblies and effective length

Length descriptions must identify their physical reference and connection allowance.

A lead section and an extension are purchased pieces. An installed foundation uses a selected combination of those pieces and joints. Define whether the quoted length is raw piece length, an assembled dimension or an effective contribution after the specified connection overlap. Use the actual controlled connection geometry; do not apply a generic overlap allowance.

Maintain a component schedule alongside the assembly schedule. The component schedule gives quantities by part identity. The assembly schedule shows the required combination and its reference dimensions. A line for thirty-six complete assemblies can conceal different extension counts, loose heads or joint sets unless those contents are explicitly defined.

Effective assembled length is not automatically embedment. Ground level, exposed portion, head geometry, connection arrangement and cut-off elevation require their own references. A revised installation record can change consumed extension quantities, but the measured record and approved disposition must support that change. Keep commercial inventory reconciliation separate from the foundation acceptance decision.



Quantity / dimension	What it describes
Piece count	Actual lead, extension, head or set identity
Assembly count	Selected combination of identified components
Effective assembled length	Defined contribution and connection basis
Embedment / elevation	Site measurement with its datum and references

03 / PRODUCT ARCHITECTURE

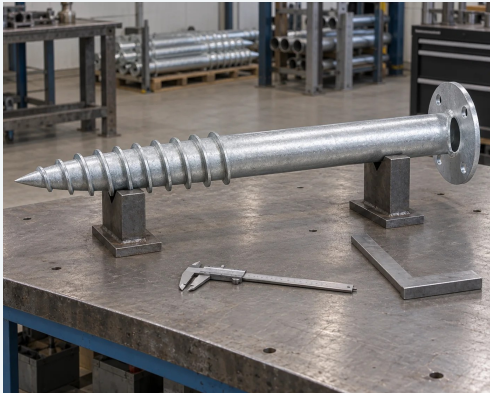
Define the fabrication, finish and delivery condition

An agreed processing sequence makes inspection and interface review usable.

Identify the required fabrication operations and their controlled details. Ask for the agreed weld procedure, examination or qualification records where the project or product requirements call for them. Define acceptance and extent through the actual applicable documents. This guide does not assign a universal weld category, penetration requirement or examination percentage to all ground screws or helical piles.

Coordinate coating and fabrication so that the required geometry and treatment can be checked at the appropriate stage. A threaded opening, insert bore, flange face or joint must retain its selected interface requirements after treatment. Record any permitted preparation or repair, the responsible party and the evidence required. Do not infer a permissible site modification from a concept image.

The delivered condition should match the current order, drawing and accepted differences. Use the lot or part map to link the required fabrication and treatment records to those objects. If the record only identifies a batch of raw steel, request the missing connection to the finished assembly. A complete dossier describes actual scope, not merely the number of pages provided.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Controlled completed dimensions
- 2 Required fabrication checks
- 3 Selected coating basis
- 4 Actual item / lot references

Inspection boundary

A concept photograph locates the feature. Actual inspection requires the specified method, extent, result and delivered-object identity.

Source scope: S11 | Reference register: page 52

04 / HEAD, JOINT AND DRIVER INTERFACES

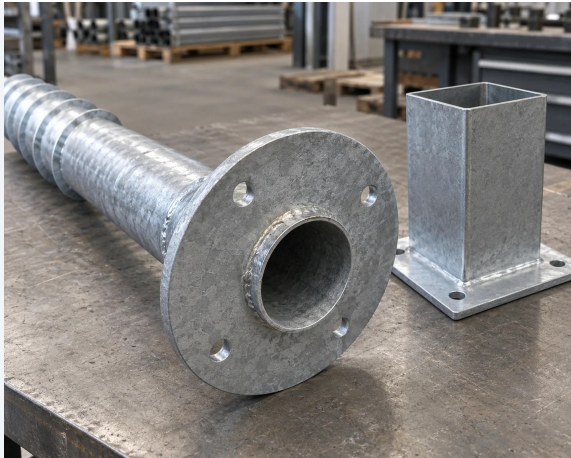
Distinguish an integral flange from a loose insert

Head architecture changes the purchased pieces and the mating details.

An integral flange is part of the completed screw body in the defined product. A separate insert is a distinct purchased part that fits a selected top opening and connection arrangement. Record which architecture applies to each buyer line. If a supplier replaces one with the other, the BOM, included hardware and evidence need explicit review.

For a flange, retain the selected face geometry, hole pattern, interface dimensions and mating-frame detail. For an insert, also retain the receiving opening, engaged geometry, retention arrangement and required finish condition. Do not infer fit or compatibility from the generic family name. Nominal tube diameter alone does not describe the complete head interface.

Identify the included and separately supplied fasteners or other connection parts. Give each defined set its contents and quantity, and name the mating component provider. Keep the engineering load-path basis linked to the actual arrangement. A correctly counted loose head is still unresolved if its interface or accepted connection record is missing.



Integral flange: included in the defined body



Loose insert: separately identified and counted

AI-generated product illustrations. No product approval or inspected-lot evidence is implied.

Quantity consequence

An integral head should not be counted again as a loose item. A separately purchased insert needs its own identity, quantity and defined hardware boundary.

04 / HEAD, JOINT AND DRIVER INTERFACES

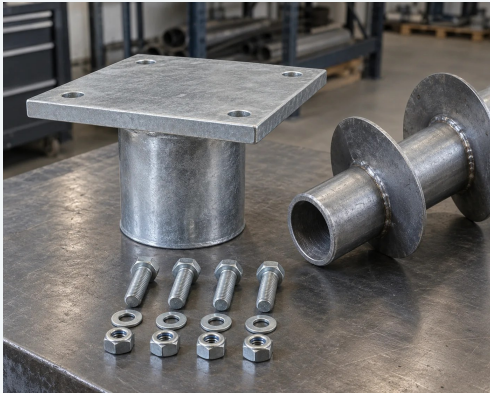
Coordinate caps, brackets and the supported structure

A pile-top part must be matched to the actual frame or structural connection.

A cap, bracket or flange transfers the supported structure's actions to the selected foundation assembly. Record the actual top connection, mating member, relevant dimensions and controlled connection detail. An eccentric or offset arrangement requires its own engineering basis; a visually similar bracket is not an approved substitute.

Name the supplier for every mating part and the party responsible for resolving interface differences. If the supported frame changes, review the head arrangement, reactions, hole pattern, elevation and evidence references together. Avoid closing a revised head detail while the foundation schedule still points to the previous support mark or load document.

Define any included fabrication or preparation and any site work separately. A loose cap shipment does not automatically include field cutting, drilling, welding or acceptance of those operations. Retain the approved procedures and responsible decisions required by the actual project. The purchasing record should describe the final accepted interface and the remaining conditions before release.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Actual cap / bracket identity
- 2 Mating-frame detail
- 3 Elevation / offset references
- 4 Hardware and work boundary

Interface item	Current package entry
Top part and frame	Exact identities and matching controlled detail
Engineering basis	Issued reactions, reference point and responsible review
Included work	Parts, preparation and named site operations

04 / HEAD, JOINT AND DRIVER INTERFACES

Purchase matched extensions and joint sets

A connection is a controlled combination, not a bag of unspecified bolts.

Identify the extension and mating lead or extension ends by their actual product or drawing references. Record the selected engagement, hole or pin arrangement, connection parts and completed condition. The same shaft family can use different couplers and hardware; compatibility is established by the selected documents rather than the photographed appearance.

Define a joint set by its complete contents, part identities and quantity per joint. Distinguish a preassembled connection from loose shipment components. If an extension adds a new joint, its commercial schedule should identify whether that joint set is included in the extension price or purchased separately. Count installed sets and requested reserve sets separately.

A proposed change in shaft, coupler or fastening arrangement should carry its affected identity and supporting record to the responsible reviewer. It can change assembled dimensions, installation interfaces and the applicability of product evidence. Record the final accepted combination and update the component and assembly schedules so that the receiving team can recognize the correct parts.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Matched connection ends
- 2 Selected joint geometry
- 3 Defined complete-set contents
- 4 Installed and reserve quantities

Set definition

Write what one joint set contains and which exact connection it serves. Count the set by joint occurrence, not by an undefined package label.

04 / HEAD, JOINT AND DRIVER INTERFACES

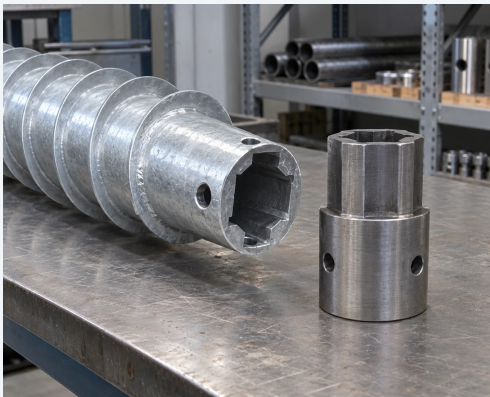
Check both sides of the drive interface

Product geometry, adaptor identity and equipment records need a common match.

A drive adaptor connects a particular product end to a particular installation system. Identify the product-side connection and the machine-side mounting or coupling, with their actual documents. Record the adaptor, drive unit and required measurement system separately. A photograph of an adaptor cannot establish its compatibility, permitted use or equipment capacity.

The selected equipment and product instructions determine the relevant operating requirements and restrictions. The American Ground Screw installation manual explicitly accompanies other equipment documentation. Obtain the actual current documents for the selected objects and have the responsible provider confirm their applicability. Do not transfer another manufacturer's operating settings or adaptor details to a METDAX enquiry.

Keep adaptor purchase, installation work and torque measurement responsibilities visible. If the driver or measurement channel changes during the work, record the affected locations, date, device identity and required review. An installation log that gives a number without its measuring system and units cannot reliably support the intended engineering interpretation.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Product-side connection
- 2 Machine-side coupling
- 3 Adaptor / drive-unit identity
- 4 Measurement-system records

Equipment enquiry

Request the actual compatibility response and required documents. This handbook gives no drive settings, operating sequence or universal torque limit.

Source scope: S09 | Reference register: page 52

05 / TRIAL AND TEST PLANNING

Define what the trial program must answer

A test request starts with an objective, location group and accountable interpretation.

The responsible project teams should define the purpose of the trial or test program. It may investigate a proposed product and installation approach, obtain load-movement information or meet a project verification requirement. Record the selected products, site groups, required load directions, document basis and decision owner before requesting a test quotation.

Separate a trial installation record from a load-test record. A trial log can describe location, product combination, equipment, measured installation information and observed conditions. A load test requires its selected method, approved plan, apparatus and data. A successful installation event cannot be relabelled as a compression, tension or lateral load test.

Use a matrix to list planned test elements, location references, direction, method and reporting requirement. Identify whether a tested object is retained, removed or otherwise handled under the actual project documents. Do not invent a trial count or acceptance percentage from this guide. Keep changes to scope or sample selection linked to the responsible review and the current plan.

COMPRESSION

Selected axial-compression record

TENSION

Selected axial-tension record

LATERAL

Selected lateral-load record

Plan actual elements, site groups, methods, required evidence and responsible interpretation.

Planning question	Required project entry
Why test?	Objective and decision the information will support
What / where?	Actual element, assembly and represented site group
Which direction?	Compression / tension / lateral and selected method
Who decides?	Test provider, engineering reviewer and acceptance basis

Source scope: S03, S04, S05, S06 | Reference register: page 52

05 / TRIAL AND TEST PLANNING

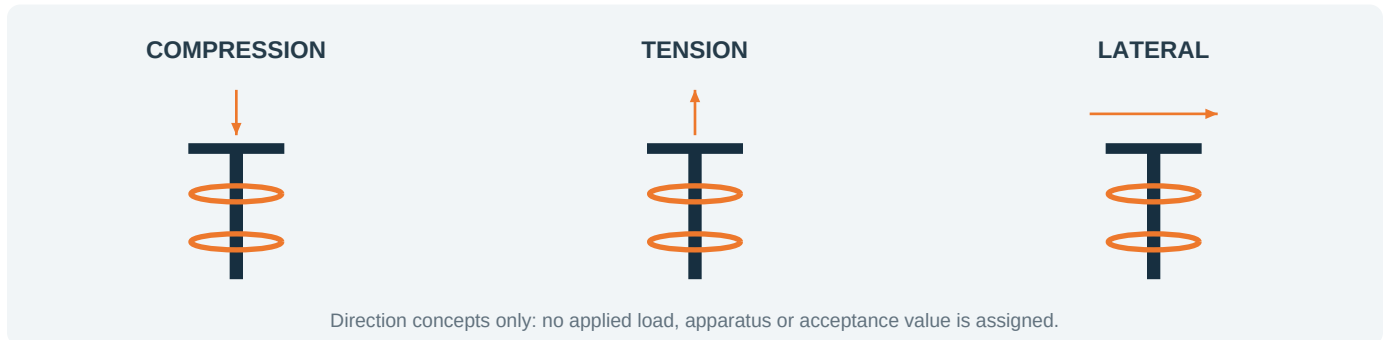
Keep compression, tension and lateral methods distinct

The current public ASTM scopes describe three different load directions.

ASTM D1143/D1143M-26 addresses static axial compressive loading of deep foundation elements. ASTM D3689/D3689M-25 addresses static axial tensile loading. ASTM D3966/D3966M-25 addresses static lateral loading. These public publisher scopes identify the relevant direction; the actual project team selects the applicable procedure, edition and complete requirements.

A record for one direction does not automatically answer a requirement for another direction. A compression test file cannot close a missing lateral record simply because the foundation identifier matches. Preserve direction, orientation, point of application and the selected plan reference so that data can be interpreted in its intended context.

The full methods and project documents govern apparatus, loading procedures, readings and reporting. Obtain those documents through their proper sources. This handbook reproduces no load schedule or acceptance limit. The responsible foundation engineer interprets the resulting data for the actual foundation and site, with the project's design and acceptance basis.



Public publisher reference	Direction identified in its scope
D1143/D1143M-26	Static axial compression
D3689/D3689M-25	Static axial tension
D3966/D3966M-25	Static lateral loading

Source scope: S03, S04, S05 | Reference register: page 52

05 / TRIAL AND TEST PLANNING

Request a controlled test plan and equipment register

The buyer can check document completeness without designing the test apparatus.

The test plan should identify the actual element, location, geometry, installation record, selected method and project-specific objective. Request the applicable loading and reporting requirements from the responsible project and test teams. Identify the planned reaction arrangement and instrumentation through their controlled documents and named responsible providers.

Retain the relevant equipment identifiers, measurement channels, calibration or verification documents and validity references. A calibration attachment needs a match to the actual instrument or system used and the required measurement function. A folder of unrelated equipment certificates does not establish that the planned load or movement channel is covered.

Resolve differences between the proposed plan and required method through the assigned engineering review. Changes in apparatus, measuring arrangement or procedure need a traceable disposition. Installation or testing should proceed under the approved actual documents and responsible work arrangements. This page is a procurement and evidence checklist, not instructions for building a reaction system or conducting a load test.

ELEMENT / PLAN	APPARATUS / DATA	REVIEW / OUTPUT
Actual identity / method	Controlled provider records	Accepted scope / files

Document checklist only, not a test-apparatus design or loading procedure.

Plan object	Check the actual reference
Element / site	Identity, assembly, location and linked installation log
Method / objective	Selected edition, procedure and project requirement
Apparatus / instruments	Controlled plan, identifiers and required evidence
Review / reporting	Accepted differences, responsible parties and output files

Source scope: S03, S04, S05 | Reference register: page 52

05 / TRIAL AND TEST PLANNING

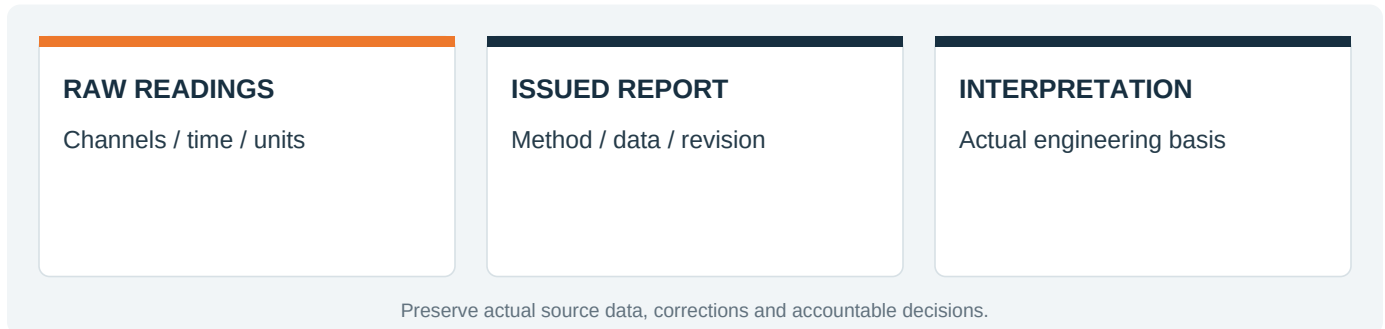
Preserve raw readings, units and observation times

A summary capacity figure cannot replace the underlying test record.

Request the raw and issued records required by the actual test plan. Their structure should preserve the element identity, loading direction, measured quantities, units, observation times and applicable procedure references. Retain unusual events, interruptions or changes with their source record. An isolated peak value cannot describe the complete load-movement response or its context.

Connect each measurement channel to its equipment identity and supporting document. Preserve the original data format where required, together with the issued report and any approved correction. If units or channel labels are ambiguous, request a source clarification instead of silently relabelling numbers in a spreadsheet. A corrected report needs its revision and superseded-file link.

Keep installation information, site inputs and test data available to the responsible interpreter. A plotted curve should come from the identified actual dataset and show its units and method context. This guide contains no invented test curves or measured foundation results. Its teaching cases use only quantities and document-status counts, keeping examples separate from performance evidence.



Data layer	Required traceable content
Original readings	Channel, units, time and actual source files
Issued report	Element, direction, method, results and revision
Corrections / events	Original issue, reason, reviewer and updated record
Interpretation	Engineering decision linked to the actual data and basis

Source scope: S03, S04, S05 | Reference register: page 52

05 / TRIAL AND TEST PLANNING

Separate measured results from acceptance decisions

The engineering disposition must identify its basis and applicable objects.

A load test supplies measured information under particular conditions. The responsible engineering team interprets it using the selected method, project requirements and actual product and site basis. Keep the issued data, interpretation and acceptance disposition as linked but distinct records. A test provider's file name or a procurement check mark is not the project's foundation acceptance decision.

Record which elements, groups or configurations the disposition applies to and any stated conditions. If the test uses one product combination and the proposed supply uses another, identify that difference explicitly. The public lateral-method scope cautions that a test result may not represent the long-term performance of the whole foundation system. The project review decides what conclusions are supported.

Purchasing can verify that an accountable decision exists and that its references match the offered objects. It should preserve an unresolved or conditional status where the engineering review is incomplete. Request the missing explanation or source without inventing an acceptance rule. A final dossier should show the current decision, applicable limits and closure records rather than only the original test report.

MEASURED DATA

Specified test / conditions

ENGINEERING REVIEW

Applicable objects / basis

DISPOSITION

Decision / conditions

Document completeness and foundation acceptance are distinct conclusions.

Disposition record

Capture the decision issuer, document revision, applicable assembly and location groups, conditions and required follow-up.

Source scope: S03, S04, S05 | Reference register: page 52

05 / TRIAL AND TEST PLANNING

Check product and site scope before transferring evidence

A named report or successful test cannot cover an unidentified alternative.

Use an actual product-evaluation report to verify report-holder identity, named models, evaluated scope and relevant conditions. For example, official ICC-ES ESR-4226 identifies American Ground Screw, Inc. and AGS Ground Screw Systems; the reviewed report was reissued in March 2026 and revised in June 2026. It is a third-party identity example, not evidence of METDAX product coverage.

For any offered product, obtain its own applicable evidence and confirm the actual configuration match. Similar thread appearance, shaft dimensions or a shared application name do not establish that a different seller's part is included in a named evaluation. Keep the official source, retrieval date and responsible review with the proposal.

Likewise, record the site, geometry, installation and equipment differences when considering whether a trial result informs other locations. The responsible engineering team determines the relevance of those conditions. Preserve the proposed transfer, supporting basis and accepted scope; do not turn one reported result into a universal catalogue capacity or apply it to every location in the order.

OFFICIAL SOURCE

Actual holder / models

OFFERED OBJECT

Configuration / records

PROJECT USE

Site / conditions / review

A third-party report does not establish another seller's product coverage.

No inherited approval

This handbook does not claim a METDAX evaluation report, certified load table or universal foundation rating. Required records are confirmed for the actual offered objects.

Source scope: S01, S02, S05 | Reference register: page 52

06 / INSTALLATION RECORDS

Give every installed element a stable record identity

Location marks connect product consumption, site information and later review.

Use the released location or support mark as the primary record key, with the installed date, performing party and referenced layout. Connect the actual lead or screw, extensions, head and joint configuration to that key. Keep relevant lot or part identifiers when required. A delivery batch number alone cannot identify which combination was installed at a particular location.

The actual installation documents define required observations and record intervals. Preserve equipment and measurement-system identities, measured geometry, readings, units and events as required. The Helical Piers Inc. manual illustrates the role of depth, torque and final-elevation records for its own system. Use the selected product's applicable instructions rather than copying another system's work sequence.

Maintain a status and revision trail for the issued log. If a location is moved, reworked, removed or replaced, link the original and current records instead of overwriting the old identity. This permits quantities, tests and final dispositions to follow the same physical object. The responsible reviewer determines whether the recorded installed condition satisfies the project.

STABLE MARK

Location / current layout

ACTUAL LOG

Parts / equipment / readings

REVIEW LINK

Changes / disposition

Preserve the same installed-object identity through records and handover.

Stable key

Location / element mark + current layout + actual product combination + installation record revision + accountable review.

Source scope: S09, S10, S06 | Reference register: page 52

06 / INSTALLATION RECORDS

Record torque with its measuring system and units

A torque reading is installation information; its engineering use needs an applicable basis.

Identify the actual torque measurement system, channel, units, device or equipment reference and required verification records. A machine display, hydraulic-pressure reading and directly measured torque are not automatically the same quantity. If a conversion is used, retain its applicable source, equipment match and responsible review rather than applying an assumed generic relationship.

Torque and force are different quantities. A force unit such as kN is not a torque unit such as kN m. If a purported torque log reports a force unit, retain the original entry and request the source channel and unit confirmation. Do not silently change the label or infer a foundation capacity from the number. A unit correction needs evidence and a traceable revised record.

Any use of installation torque in a foundation assessment requires the applicable product and project basis and engineering interpretation. This guide supplies no universal torque-to-capacity coefficient, permitted installation torque or equipment setting. Procurement should request the actual required record and its basis, while keeping measured installation information distinct from an accepted design capacity.

FORCE kN Force quantity	TORQUE kN m Torque quantity	RECORD BASIS Actual channel Device / units / source
---	---	---

Different quantities. No conversion from installation torque to capacity is supplied.

Read the label

kN describes force; kN m describes torque. Identify the actual channel and original source before interpreting an ambiguous recorded value.

Source scope: S09, S10, S12 | Reference register: page 52

06 / INSTALLATION RECORDS

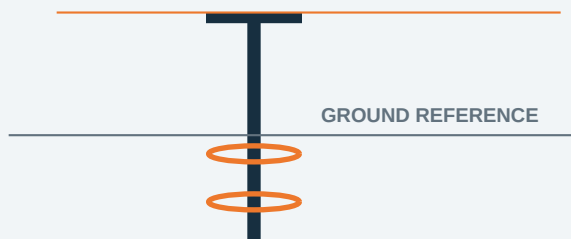
Record embedment, assembled length and elevations separately

One length field cannot preserve the installed geometry.

Use the actual product and project documents to define the measured reference points. Piece length describes a supplied object; effective assembled length describes a selected connected arrangement. Embedment relates the installed foundation geometry to the ground reference, while the head or cut-off elevation uses the selected site datum. Retain each applicable value and its measurement basis.

When extensions are added or a shaft is prepared under the approved documents, record the resulting actual combination and geometry. Identify the current head, joint count and connection allowances from the selected configuration. A component-consumption record can reconcile inventory, but it cannot establish installed embedment unless the relevant site measurement and references are present.

Compare the issued log with the current layout and required elevation record. Ask for a clarification where the label, datum or reference point is missing. Do not back-calculate an approved installation depth from a nominal catalogue length or a shipment total. Keep the responsible engineering disposition linked to the actual measured installed condition and accepted changes.



Head / cut-off elevation: common datum
 Embedment: defined site reference points
 Assembled length: actual connected geometry

Reference-point concept only. No elevation, embedment depth or engineering length is specified.

Recorded value	Include its reference
Actual combination	Lead / extensions / joints / head identities
Assembled length	Selected connection basis and actual measured condition
Embedment	Defined ground and foundation reference points
Head / cut-off elevation	Common survey datum, mark and measurement source

06 / INSTALLATION RECORDS

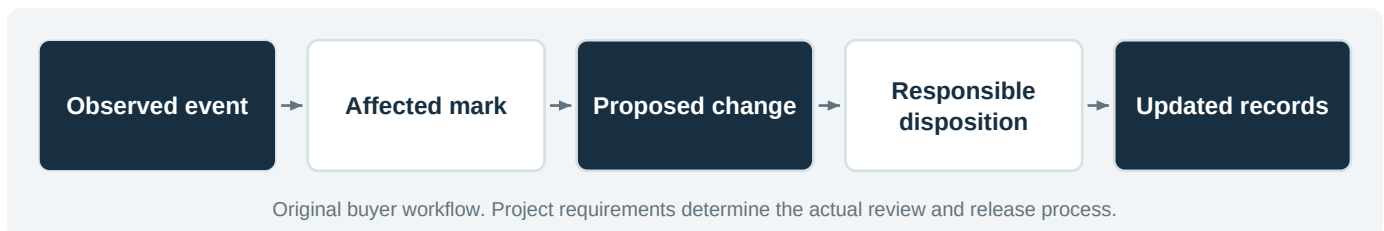
Preserve unexpected conditions and changed configurations

The record should show the event, affected object and responsible disposition.

The actual installation and project documents govern how the performing team handles unexpected conditions. From a purchasing and record perspective, preserve the location, original configuration, observed event, source evidence and immediate record status. The appropriate site and engineering teams determine the required action. This handbook does not provide operating instructions for obstruction, refusal or recovery.

A proposed extra extension, relocated position, alternative head or replacement lead is a configuration change. Record the affected quantities, drawings, installation documents and evidence. The review should address the actual changed object and site context. A supplier's availability response may help identify options, but it is not an engineering acceptance of the substitute.

After the accepted action, issue the current component and location records and link them to the original observation and disposition. Reconcile consumed, returned, damaged and remaining parts separately. Keep an unresolved item open if the required evidence is missing, even when the physical work appears finished. A close-out record must identify what was resolved and who accepted it.



Event entry	Required trace
Observation	Date, mark, original record and supporting evidence
Proposal	Actual changed parts, site position or work reference
Decision	Responsible issuer, conditions and accepted scope
Closure	Revised records and reconciled physical quantities

06 / INSTALLATION RECORDS

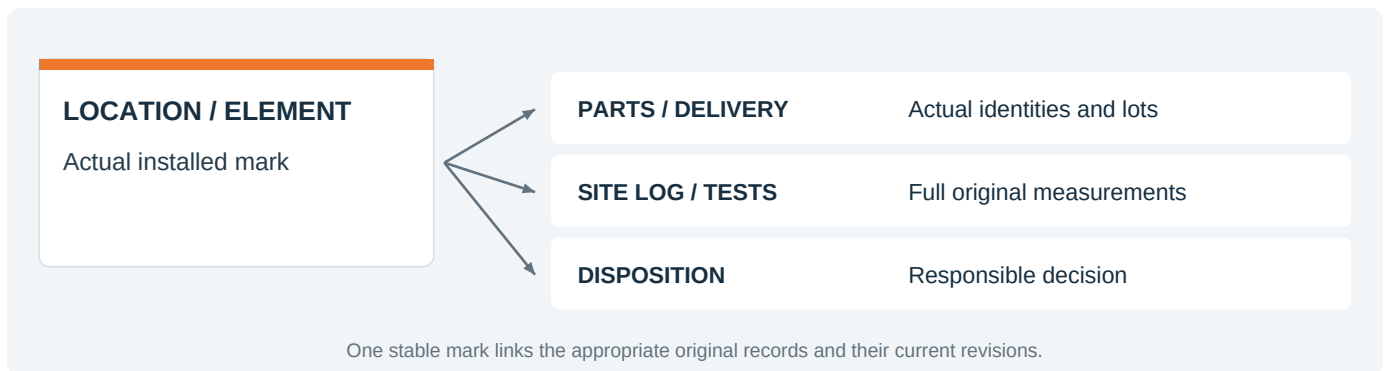
Build a location-to-dossier handover map

Receiving, installation, tests and decisions should share the same identifiers.

Organize the final record set by location and product combination, with links to purchased and delivered parts. Include the relevant installation log, required test files, accepted changes and engineering dispositions. Preserve the original source records and their revisions. A folder sorted only by supplier or date makes it difficult to establish which evidence belongs to an actual installed element.

Separate the supplier's factory and delivery documents from the installation and site-test records produced by other providers. A material certificate cannot close a missing field log; an installation log cannot confirm an unverified material lot. Use a completeness matrix that names each required record, responsible provider, actual file and review status.

The UFGS guide specification for [Grouted] Helical Piles includes project-input, testing and reporting roles within a document intended for project editing. It is a useful record-planning reference, not an automatic specification for every helical product. The actual project package establishes which records and conditions are required. Keep the final accepted dossier aligned with that package.



Handover object

Current location schedule + actual configuration + required factory / delivery evidence + installation and test records + accountable dispositions.

Source scope: S06 | Reference register: page 52

07 / RFQ AND CHANGE CONTROL

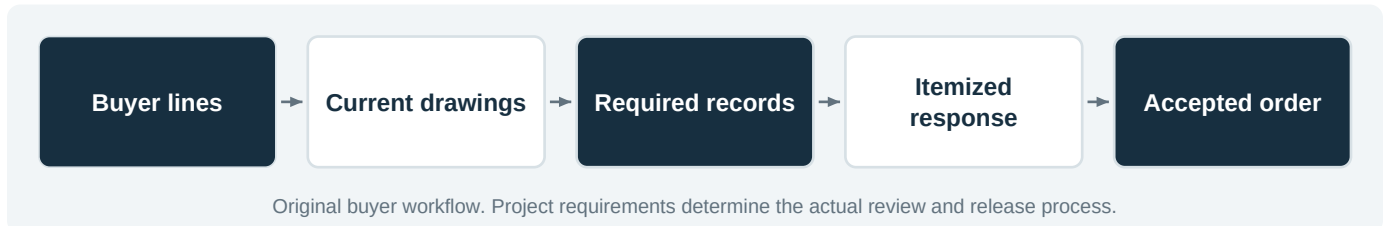
Issue an itemized enquiry with a controlled attachment list

A supplier should be able to identify the exact physical and documentary scope.

Give the enquiry a reference, revision and required response date. Identify the application, destination, site groups and requested physical objects. Attach the controlled product or assembly drawings, component schedule, relevant site and reaction references, required treatment and inspection basis, interface documents and required records. Mark preliminary inputs and list open decisions explicitly.

Ask the supplier to respond by buyer item with its actual offered identity, physical unit, complete-set contents, material, treatment, included preparation, document deliverables and differences. If a requested part is drawing-led rather than an identified catalogue model, retain that drawing and the supplier's reviewed response. A general family description cannot close a line-level ambiguity.

State the boundaries for design, installation, equipment and testing in the same package. Identify any services actually requested and their responsible parties. Confirm packing, delivery sequence and document timing with the offer. The accepted quotation and order should refer to the same current attachment set so that later receiving does not use superseded quantities or configurations.



RFQ object	Reviewable content
Component / assembly	Actual identity, variant, quantity and unit
Inputs / interfaces	Site, reactions, mating parts and driver boundaries
Quality / evidence	Selected inspection, finish and required records
Commercial basis	Included work, differences, packing and sequence

07 / RFQ AND CHANGE CONTROL

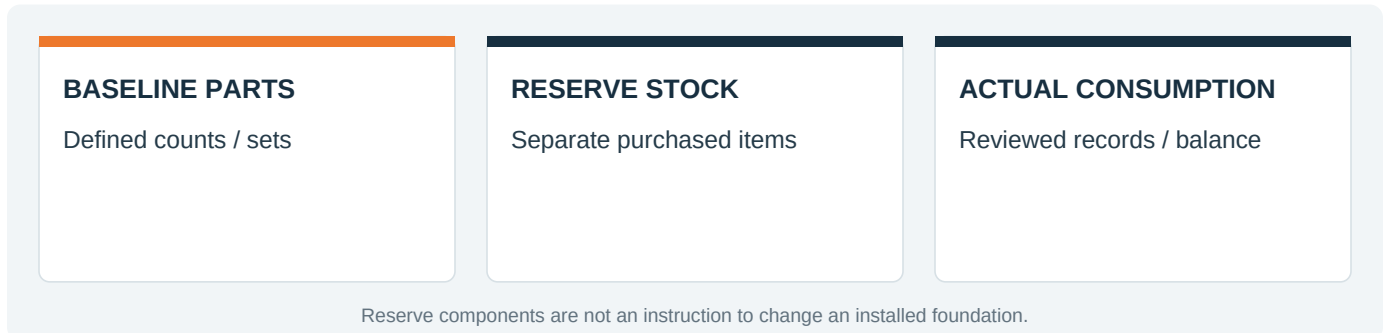
Price extensions, joints and uncertainty explicitly

Separate the known purchase schedule from contingent site consumption.

An initial assembly schedule may use provisional extension quantities pending the actual reviewed site and installation information. Identify that commercial assumption and its status. Price the defined lead, extension, joint set, head and any requested reserve stock separately where useful. Avoid hiding a uncertain quantity inside an undefined price per completed pile.

A reserve extension is a purchased component, not an instruction to add length to an installed foundation. Identify whether reserve joint sets are needed and whether their contents match the selected connection. Record how unused components, extra deliveries or accepted returns will be handled. The relevant engineering decisions remain tied to the actual installed configuration.

Compare offers on a common item and unit basis. Check whether a joint set is included with an extension, whether a head is integral, and whether an adaptor or equipment service is excluded. A lower unit price can describe a smaller physical package. Keep the accepted inclusions and differences with the released BOM rather than relying on an email subject line or total amount.



Commercial line	Define separately
Base parts	Leads / screws / heads and actual defined units
Extension / joint	Part identities, included sets and provisional counts
Reserve stock	Separately requested components and commercial disposition
Other work	Adaptor, installation, testing or other agreed services

07 / RFQ AND CHANGE CONTROL

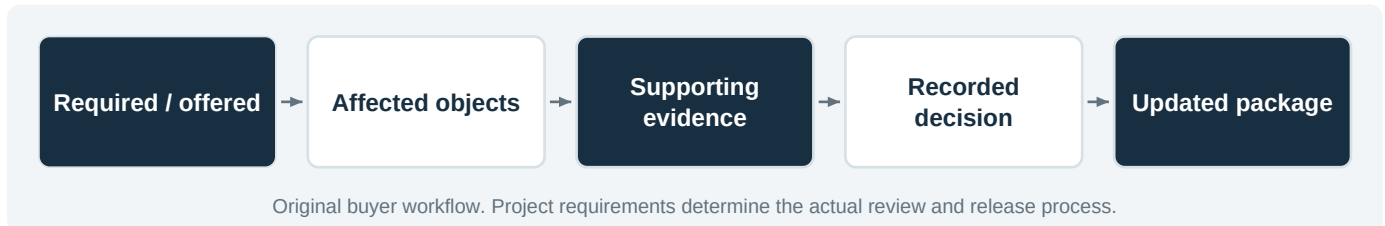
Close deviations against the affected current records

An accepted difference needs an actual object, decision and updated package.

Compare the supplier response to each enquiry line and its attachments. Record required and offered identities, geometry, material, treatment, complete-set contents, quantities and records. Give every difference a stable reference and the affected item or location group. Do not write simply equivalent where the actual proposed specification or connection remains unidentified.

Route technical differences to their responsible reviewers and preserve the supporting documents. A shaft substitution may affect product evidence and installation interfaces; a different head may affect frame geometry and hardware; a revised finish can affect inspection and preparation. Record the decision, conditions and document revisions together so that the accepted scope is clear to every provider.

After review, update the BOM, assembly schedule, attachment register and commercial scope. Obtain acknowledgement of the same current package through the actual order process. Keep unresolved differences visible and distinguish a preliminary quotation from a released purchase basis. Later receiving and site records should cite the accepted versions and any subsequent authorized changes.



Release trail

Accepted identities + current drawings and quantities + required records + closed or explicitly conditioned differences + supplier acknowledgement.

08 / QUALITY, PACKING AND RECEIVING

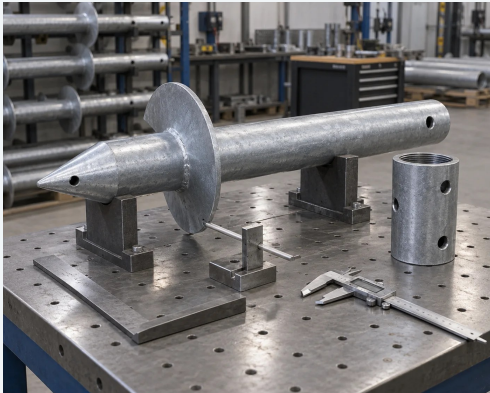
Make the inspection plan specific to the ordered objects

Material, fabrication, fit and finish checks need their own extent and criteria.

Agree the required inspection and document plan against the actual order. Identify the check, applicable drawing or specification, stage, extent, responsible party, result record and required disposition. Separate material identity, completed geometry, fabricated connections, selected fit and treatment. A single generic inspection statement is insufficient where the order requires distinct evidence.

Preserve measurement and inspection references with the reported results. A completed opening or hole pattern should be checked against the selected interface requirement, not a dimension inferred from an illustration. Coating inspection must use the agreed product acceptance and measurement basis. Any specified fabrication examination must follow its actual required method and extent.

Link the issued records to buyer items, parts, lots and shipments. A nonconforming or ambiguous result should identify the affected quantity and responsible disposition before closure. Actual factory inspection records demonstrate the specified manufacturing checks; they do not establish geotechnical capacity or field installation acceptance. Keep those evidence boundaries clear in the delivery dossier.



AI-generated concept illustration; not a factory, inspection or shipment photograph.

WHAT TO CONFIRM

- 1 Material / part identity
- 2 Drawing-based geometry
- 3 Required fabrication / fit checks
- 4 Selected finish acceptance

Useful inspection record

Actual object + requirement reference + method / stage / extent + measured or observed result + reviewer and disposition.

Source scope: S11 | Reference register: page 52

08 / QUALITY, PACKING AND RECEIVING

Pack by identified pieces and defined set contents

The packing map should explain what each delivery unit contains.

Use a packing list that connects each bundle, crate or other delivery unit to buyer item, part identity, quantity and relevant lot or mark. Distinguish leads, extensions, integral-head screws, loose inserts, caps, joint sets and adaptors. A total weight or package count alone cannot reconcile the purchased foundation components.

Coordinate agreed protection for the selected surfaces and geometry with handling and delivery requirements. Keep loose defined sets identifiable and state their contents. If one package contains parts for several site groups, list the allocation clearly. A packing label should not imply that the package is a complete assembly unless its actual contents meet that definition.

Separate installed-use quantities from separately purchased reserves and account for partial deliveries. Show delivered and remaining balances by the same physical unit as the order. Retain the shipping-document links and any required accompanying records. An AI-generated packing illustration locates the purchasing concern; only the actual shipment evidence describes the delivered condition and contents.



Screw-body and loose-head quantity map



Lead, extension and defined joint-set map

AI-generated product illustrations. No product approval or inspected-lot evidence is implied.

Complete-set question

What does one purchased set contain, which part or joint does it serve, and in which identified package is it delivered?

08 / QUALITY, PACKING AND RECEIVING

Reconcile receipt and preserve the actual disposition

Count, identity, condition and documents are separate receiving checks.

Compare the shipment with the current order, accepted differences and packing list. Record the received part identities, quantities, lengths or defined set counts as applicable. Check labels and required accessible features against the selected documents. Confirm the delivered and remaining balances rather than assuming every foundation is represented by one identical complete kit.

Record visible damage, missing parts, ambiguous identities and missing documents with their affected quantity and source evidence. Use actual photographs or measurements when appropriate. Keep the responsible disposition and agreed next action linked to the receipt entry. A receiving decision about physical delivery is distinct from the engineering acceptance of the installed foundation.

For a later site question, preserve the original order and shipment map alongside the installation and test records. If a part is replaced, returned or used as a substitute, update the actual inventory and configuration links. Close the issue only when the required evidence and accountable decision are recorded. A delivery signature should not erase an unresolved technical or document discrepancy.

IDENTITY Actual part / current order	QUANTITY Count / defined contents
CONDITION Required checks / evidence	DOCUMENTS Source map / disposition

Receiving review describes the delivery; site acceptance uses its own evidence.

Check	Keep the result distinct
Identity / quantity	Actual item, count, complete-set contents and balance
Condition / geometry	Required accessible checks and source observations
Documents	Specified files, lot links and missing evidence
Disposition	Affected objects, responsible decision and closure

09 / TEACHING CASES

Case 1: count screws and two different head arrangements

Fictional schedule: 120 positions, with 80 integral heads and 40 separate inserts.

The exercise schedule contains 80 GS-A screw bodies with integral flanges and 40 GS-B screw bodies requiring separately purchased H-B inserts. The fictional layout has 120 positions, one screw body per position. Each GS-A requires one hardware kit A; each GS-B and H-B combination requires one hardware kit B. These are counting assumptions, not product designs or connection recommendations.

Define kit A as four bolts, four nuts and eight washers. Define kit B as two bolts, two nuts and four washers. The exercise also requests one AD-A adaptor and one AD-B adaptor as separate tool parts. Their actual machine and product compatibility is unresolved. No site investigation, support reactions, capacity or accepted installation procedure is supplied by this exercise.

The buyer should count integral flanges within the completed GS-A bodies, not order eighty additional loose heads. Count forty H-B inserts separately. Preserve the two body and hardware variants in the enquiry and packing map. Equal position counts do not make their complete-set contents equal, and a correct arithmetic result cannot close the missing engineering inputs.

GS-A: 80

Integral head / kit A

GS-B: 40

Loose H-B / kit B

TOTAL: 120

40 loose heads

Fictional exercise: physical counts only; site and compatibility decisions remain open.

Teaching item	Defined physical unit	Quantity
GS-A	Screw body with integral flange	80
GS-B	Screw body for separate H-B insert	40
H-B	Loose insert for each GS-B	40
Kit A / Kit B	Defined hardware set per selected arrangement	80 / 40
AD-A / AD-B	Separately requested adaptor part	1 / 1

Boundary

All identifiers and contents are fictional. The case establishes only specified component counts, not head strength, adaptor compatibility or foundation suitability.

09 / TEACHING CASES

Case 1: reconcile hardware and the enquiry boundary

Count each named set before adding totals across the two variants.

For the eighty kit A sets, the totals are $80 \times 4 = 320$ bolts, 320 nuts and $80 \times 8 = 640$ washers. For the forty kit B sets, the totals are $40 \times 2 = 80$ bolts, 80 nuts and $40 \times 4 = 160$ washers. The combined teaching count is 400 bolts, 400 nuts and 800 washers, while the variants remain separately identified.

The screw count is $80 + 40 = 120$, and the loose-head count is forty. Calling the order 120 complete foundations would conceal the different set contents and the two adaptor lines. Request an itemized offer with the defined inclusions and unresolved interface conditions. Reserve parts, installation equipment, site work and tests are not included by the case assumptions.

Before using a real equivalent schedule, obtain the actual drawings, mating-frame documents, site and reaction inputs, required evidence and responsible reviews. Actual hardware identities and permitted combinations come from those selected records. The exercise teaches why quantity reconciliation must retain product variants, physical units and service boundaries even when the final totals are simple.

BOLTS

$$320 + 80 = 400$$

NUTS

$$320 + 80 = 400$$

WASHERS

$$640 + 160 = 800$$

Fictional kit contents. Actual hardware and permitted combinations require selected records.

Teaching group	Bolts	Nuts	Washers
80 kit A sets	320	320	640
40 kit B sets	80	80	160
Combined counted pieces	400	400	800

Review result

Counts reconcile: 120 screw bodies, 40 loose inserts and 120 defined hardware kits. Engineering inputs and adaptor compatibility remain unresolved.

09 / TEACHING CASES

Case 2: distinguish effective length from piece inventory

Fictional baseline: 36 assemblies, each using one lead and two extensions.

Assume a lead contributes 2.000 m and each extension contributes 2.000 m to the effective assembled length in this fictional arrangement. These values are explicitly effective contributions after the exercise's defined connection basis, not raw piece dimensions. One lead plus two extensions therefore gives 6.000 m per assembly. This says nothing about site embedment or required foundation depth.

The initial schedule contains 36 assemblies: 36 leads, 72 extensions, 72 defined joint sets and 36 heads. One joint set is counted for each added extension in the exercise. Effective assembled length totals $36 \times 6.000 = 216.000$ m. The teaching purchase adds twelve separately priced reserve extensions and twelve reserve joint sets, making 84 purchased extensions and 84 purchased joint sets.

The buyer should retain the baseline and reserve quantities as distinct lines. An extension quantity in a quotation is a commercial assumption, not an installation instruction. Any actual changed assembly requires the appropriate product and project review, with its actual connection details, site measurements and accountable disposition. No engineering length or capacity selection is performed here.

2.000 m lead + 2 x 2.000 m extensions = 6.000 m

36 assemblies x 6.000 m = 216.000 m effective assembled length

Fictional effective contributions. No raw-piece overlap or site embedment is calculated.

Teaching line	Baseline	Reserve	Purchased
Lead sections	36	0	36
Extensions	72	12	84
Defined joint sets	72	12	84
Heads	36	0	36
Effective assembled length	216.000 m	Component stock	No site-depth total

Dimension assumption

2.000 m is the effective contribution of each defined exercise piece. Do not use this arithmetic to infer connection overlap, installed embedment or an acceptable foundation length.

09 / TEACHING CASES

Case 2: reconcile reported consumption and remaining stock

Fictional groups consume 66 extensions rather than the baseline 72.

Assume the exercise register reports twelve assemblies with one extension each, eighteen with two each and six with three each. The group counts sum to $12 + 18 + 6 = 36$ assemblies. Extension consumption is $12 \times 1 + 18 \times 2 + 6 \times 3 = 66$. With one defined joint set per added extension, the reported joint-set consumption is also 66.

The effective assembled lengths are $12 \times 4.000 = 48.000$ m, $18 \times 6.000 = 108.000$ m and $6 \times 8.000 = 48.000$ m. Total reported effective assembled length is 204.000 m, twelve metres below the initial 216.000 m. Purchased extensions and joint sets each total 84, so each remaining balance is $84 - 66 = 18$. These are inventory and dimension calculations only.

A real register must also reconcile damaged, returned or otherwise consumed parts and accepted changes. This example assumes no additional movements. Eighteen remaining pieces do not approve a changed installation. The engineering review must address the actual changed configuration and site measurements; retain that disposition alongside the revised inventory.

84 purchased = 66 reported used + 18 remaining

Extensions and defined joint sets: same exercise count

Fictional inventory only; changed assembly and site acceptance require responsible review.

Teaching group	Assemblies	Extensions	Effective length
One extension each	12	12	48.000 m
Two extensions each	18	36	108.000 m
Three extensions each	6	18	48.000 m
Reported total	36	66	204.000 m
Remaining component stock	Not an assembly count	18	Not embedment

Scope of conclusion

The exercise reconciles 66 used and 18 remaining extensions and joint sets. It does not determine whether any reported assembly or installed foundation is acceptable.

09 / TEACHING CASES

Case 3: check a six-element trial-record matrix

Fictional file review: four direction matches, one mismatch and one missing record.

The exercise plan lists T01-T03 for compression, T04-T05 for tension and T06 for lateral loading. Assume five uniquely identified issued documents are supplied. Records for T01-T03 identify compression, and T04 identifies tension. The T05 file identifies compression where the exercise plan requires tension. No T06 lateral record is supplied. No test readings or acceptance results are assumed.

The file review has four direction matches, one mismatch and one missing entry. A matched label is only an identity and document-scope check. It does not establish that the method, equipment, raw data, interpretation or acceptance is complete. Keep those review fields separate and request the actual applicable records and accountable dispositions.

An additional exercise installation entry labels a purported torque value as 8.5 kN. The force unit is inconsistent with the stated torque quantity. Preserve the entry and ask for the actual channel, instrument and original unit. Do not relabel it 8.5 kN m, silently convert it or use it to calculate foundation capacity. The number is a fictional record-quality example, not a measured installation result.

4 MATCHED

Direction labels only

1 MISMATCH

T05: wrong direction

1 MISSING

T06: lateral file

Fictional file review: six planned entries, no measured data or test acceptance assumed.

Element	Planned direction	Supplied label	File match
T01 / T02 / T03	Compression	Compression	3 matched
T04	Tension	Tension	1 matched
T05	Tension	Compression	1 mismatch
T06	Lateral	No file supplied	1 missing

Unit issue

8.5 kN is a fictional ambiguous entry on a purported torque row. Retain its source and obtain confirmation; the case supplies no correct replacement value.

09 / TEACHING CASES

Case 3: close source issues without inventing acceptance

Document match rate describes the file review, not foundation performance.

Four matches among six planned elements give $4 / 6 \times 100 = 66.7\%$, rounded to one decimal place. Name that figure the direction-document match rate. It is not a test pass rate or an accepted percentage of installed foundations. Count the one mismatched entry and one missing entry separately so that the required next source is clear.

For T05, request the actual planned or approved direction basis and the proper source report or disposition. For T06, request the required lateral record or an accountable change to the plan. For the torque-unit issue, request the original channel and unit confirmation and retain any corrected record with its revision. Do not create a replacement test report, assume a result or close the issue from a supplier assurance alone.

Even six matched direction documents would not establish engineering acceptance. Review still needs the applicable methods, product and site identities, equipment evidence, data, interpretation and disposition. A close-out matrix names each issue, required source, provider, revision and status. The exercise ends with source requests, without an assumed performance conclusion.

T05 / T06

Required source request

UNIT ISSUE

Original channel / label

FINAL DECISION

Actual evidence / review

Fictional exercise: matching file labels does not approve foundation performance.

Exercise issue	Required source or action	Current conclusion
T05 direction	Actual report / approved plan disposition	Unresolved mismatch
T06 record	Required lateral file / approved scope change	Missing source
Torque unit	Original channel, instrument and unit confirmation	No relabelling
Engineering acceptance	Applicable full evidence and responsible decision	Not established

Count integrity

4 matched + 1 mismatch + 1 missing = 6 planned entries. The 66.7% figure is a file-direction match rate.

10 / FILLABLE WORKSHEETS

Worksheet A: project and site input register

Record the enquiry basis, current documents and missing information.

Use this worksheet to connect the application and requested supply to the actual site and engineering inputs. Enter source references and revisions rather than replacing their content with an unsupported summary. Mark preliminary information and assign an owner to each open question. The form can be filled in a compatible PDF reader and saved for the project record.

Keep the original site, reaction and layout documents with the worksheet. Update the enquiry reference when the basis changes. A completed input form helps organize a reviewable package; it does not confirm that the site investigation or foundation selection is sufficient.

Project / enquiry reference

Company / contact

Application / requested physical scope

Site / location group references

Site / geotechnical report revision

Layout / survey / datum references

Support reactions / design references

Exposure / selected finish basis

Responsible teams / provider roles

Destination / delivery sequence

Current source-document register and revisions

Preliminary inputs, open questions and responsible owners

Attachment set

Current site and geotechnical records, location schedule, support reactions, interface drawings, required evidence and delivery basis.

10 / FILLABLE WORKSHEETS

Worksheet B: product and assembly schedule

Identify the actual screw or lead, extensions, heads and defined joint sets.

Complete one record for a controlled product or assembly variant. Specify the actual drawing or model, piece identities, quantities and physical units. State whether a head is integral or separately purchased and define complete-set contents. Record assembled-length references separately from any site embedment or elevation information.

Preserve offered differences and the responsible decision with the accepted schedule. If a part changes, update the affected assembly and quantity references. The worksheet organizes physical scope and evidence; it assigns no material equivalence, product rating or acceptable foundation length.

Buyer item / assembly variant

Product / drawing / model revision

Screw or lead / shaft identity

Extension identity / per-assembly count

Integral / loose head identity

Joint identity / defined set count

Material / finish / processing basis

Piece / effective-length references

Baseline / reserve / purchased counts

Required records / review decision

Complete-set contents, physical units and assembly configuration

Offered differences, supporting files and accepted current changes

Quantity basis

Keep baseline component counts, separately purchased reserves, complete-set contents and actual accepted variants visible.

10 / FILLABLE WORKSHEETS

Worksheet C: head, joint and drive-interface review

Use actual mating identities and provider documents for the selected combination.

Identify the interface object and both mating sides. A head review needs the supported structure's current detail; a joint review needs the selected extension and connection parts; a drive review needs the adaptor, product end and machine-side documents. Enter the required record, supplying parties and accountable review result.

Record an unresolved dimension or configuration without treating a nominal match as approval. Attach the actual compatibility response and accepted differences. This form provides no equipment settings or installation instructions; the selected documents and responsible providers establish those requirements.

Affected item / interface reference

Head / joint / drive interface

First mating product / revision

Second mating product / revision

Controlled geometry / detail ref

Hardware / defined complete set

Equipment / adaptor / channel refs

Required source / evidence refs

Supplying / performing parties

Reviewer / decision reference

Actual compatibility requirements, current details and provider handovers

Unresolved differences, accepted conditions and revised records

Actual combination

Mating identities, current details, required evidence and an accountable disposition.

10 / FILLABLE WORKSHEETS

Worksheet D: trial and load-test evidence plan

Record direction, method, element identity and the required report package.

Use one worksheet per controlled test-plan group or element. Identify its objective, assembly, site group, method, direction, providers and required records. Reference the approved plan and equipment register. Keep acceptance requirements in their actual controlled source.

Keep installation logs, raw readings, equipment evidence, issued reports and engineering dispositions as separate linked files. Update plan changes and source requests with their revisions. A completed evidence plan describes what must be supplied and reviewed; it does not demonstrate a passing test or approve the reaction arrangement.

Element / test-plan group reference

Objective / decision to support

Site group / actual assembly

Compression / tension / lateral

Selected method / edition / plan

Required acceptance-basis reference

Test / engineering parties

Apparatus / instrument register ref

Installation log / original data refs

Issued report / review status

Required records, applicable scope, reporting and approved changes

Source requests, responsible interpretation and disposition references

Direction check

Keep compression, tension and lateral records matched to their actual planned directions.

10 / FILLABLE WORKSHEETS

Worksheet E: installation record and review index

This cover index links to the full actual log; it does not replace required readings.

Use the released location or element mark and actual installed combination. Identify equipment and measurement documents, units and geometry reference points. Link the full installation log and required time or interval records rather than attempting to summarize them in a single value. Capture events, accepted changes and the responsible review reference.

Keep torque, effective assembled length, embedment and head elevation in their proper source records and units. If a label or datum is unclear, record the source request and preserve the original entry. This worksheet is an index and review aid, not a field operating procedure or a torque-to-capacity calculation.

Location / element / current layout

Date / provider / issued-log revision

Actual lead / screw / lot identities

Actual extensions / joints / head

Drive / adaptor / measuring refs

Torque channel / units / source ref

Effective assembled-length source

Embedment / head-elevation sources

Datum / actual measurement basis

Reviewer / disposition reference

Full-log links, original readings, units and relevant verification documents

Observed events, accepted changes, source clarifications and closure

Full record

Attach original measurements, channel / unit evidence, geometry sources and the disposition.

10 / FILLABLE WORKSHEETS

Worksheet F: receipt, quantity and issue disposition

Reconcile identified parts and required documents against the current order.

Identify the order, packing unit, delivered part, quantity and defined set contents. Record the current drawing or model, lot or mark, required checks and documents received. Use the purchase schedule's units for remaining balances. Preserve actual observations and evidence for each discrepancy.

Assign the issue to its responsible provider and record the disposition and closure reference. Update returned, replaced, damaged and remaining parts separately. Receiving confirmation addresses the delivered package; installed-foundation acceptance stays linked to its engineering, installation and test records.

Order / shipment / packing unit

Buyer item / part / lot reference

Model / drawing / current revision

Received count / length / defined sets

Reserve / remaining delivery balance

Complete-set contents / shortages

Condition / required accessible checks

Documents received / missing

Affected quantity / issue reference

Reviewer / disposition reference

Actual observations, source evidence and quantity reconciliation

Agreed action, responsible provider, revised records and closure

Closure record

Affected item and quantity, original evidence, accountable action and current balance.

11 / QUICK REFERENCE

Use precise terms in the enquiry and record set

The same word should identify the same object or measurement throughout the package.

Keep these terms attached to their actual drawing, method or project references. Where a selected product defines a term differently, retain that definition and its source. A glossary helps the purchasing team ask a precise question; it does not standardize every manufacturer's product architecture.

Term	Meaning in this procurement guide
Screw body	Identified single ground-screw piece, with its specified top
Lead section	Identified lower helical-pile section and helix arrangement
Extension	Identified added shaft piece for the selected connection
Joint set	Explicit complete-set contents for one actual joint
Integral head / loose head	Head included in the body / separately purchased part
Effective assembled length	Dimension using the stated actual connection basis
Embedment / head elevation	Site geometry with defined reference points / datum
Installation torque	Recorded installation quantity and measuring-system basis
Compression / tension / lateral	Distinct force directions in the selected load-test plan
Test record / interpretation	Measured evidence / responsible engineering analysis
Evaluation report	Named products, holder, scope and conditions from its issuer
Release / disposition	Accountable purchasing or review decision and its conditions

Before release

Confirm actual identities, site and reaction basis, interfaces, quantities, required evidence, accepted differences, responsibilities and current attachment revisions.

12 / REFERENCE REGISTER

Public sources and actual applicability

Primary-publisher references locate the document role; the project selects its requirements.

Public sources were checked on 13 October 2026. ASTM entries identify the reviewed public scopes, not a reproduced full standard. Named editions, report revisions and manual cover versions identify the sources reviewed. Verify the actual required editions, current records and product coverage for each project and purchase.

The UFGS guide is intended for project editing; its bracketed choices and product-specific details are not universal requirements. Named manufacturer manuals and ESR-4226 are third-party examples of document and identity roles. They do not establish METDAX authorization, report coverage, product certification or permission to adopt another system's installation settings.

S01 ICC Evaluation Service - Official approved-criteria index: AC358(24)

S02 ICC Evaluation Service - ESR-4226: AGS identity example; revised June 2026

S03 ASTM International - D1143/D1143M-26: public axial-compression scope

S04 ASTM International - D3689/D3689M-25: public axial-tension scope

S05 ASTM International - D3966/D3966M-25: public lateral-test scope

S06 USACE / NAVFAC / AFCEC - UFGS 31 63 26.60: project-edited guide specification

S07 ASCE - ASCE / SEI 7-22: public structural-load framework

S08 ASCE - Hazard Tool: location and edition input roles

S09 American Ground Screw - Installation manual: cover version 1.3, April 2025

S10 Helical Piers Inc. - Installation manual: depth / torque / elevation record roles

S11 American Galvanizers Association - ASTM A123 product role / E376 measurement role

S12 NIST - SI Appendix B.8: force and torque unit distinctions

Use the issuer source

Obtain the actual complete documents and keep the applicable product, site, edition, conditions and responsible decisions with the accepted enquiry.

13 / METHODS AND IMAGE POLICY

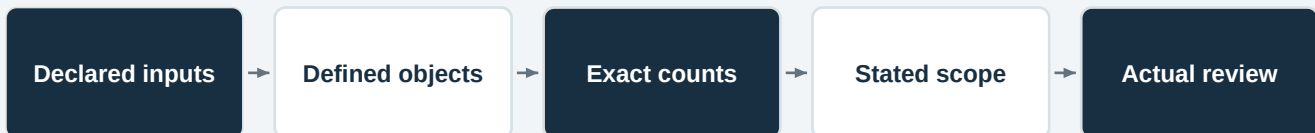
Illustrations, case arithmetic and version method

Concept pictures and document examples are separate from actual project evidence.

All twelve selected product pictures are AI-generated concepts reused from the existing METDAX asset library. They are not factory, inspection, packing, installation or test photographs. Original diagrams explain information, interfaces and quantity relationships. No picture or schematic demonstrates tested capacity, corrosion life, approved geometry, equipment compatibility or a completed site installation.

GS-A, GS-B, H-B, AD-A, AD-B, kit contents, assembly groups and T01-T06 are fictional teaching inputs. Case 1 multiplies explicit hardware contents by their group counts. Case 2 uses stated effective 2.000 m contributions and counts one defined joint set per added extension. It does not calculate raw piece geometry, overlap or embedment. Case 3 counts direction-document matches and rounds $4 / 6 \times 100$ to 66.7%.

No test measurements, load-movement curves, foundation capacities, universal torque coefficients, installation settings or design lengths were calculated or asserted. The ambiguous 8.5 kN example deliberately remains unresolved. Use the fillable worksheets to preserve real sources and reviews. Long source records and field logs remain attached separately, rather than being replaced by a form summary.



Original buyer workflow. Project requirements determine the actual review and release process.

Version record

MDX-TP-06 / version 1.0 / 13 October 2026. First illustrated edition. Record future changes to references, examples, diagrams, form fields and the accepted brand information.

METDAX / NEXT STEP

Send a defined ground-foundation enquiry

Ground-screw and helical-pile component families, specified by actual drawings and scope.

METDAX Industrial Supply includes ground screws and helical piles in its website product range. Send the requested physical products, current drawings or model references, component and assembly quantities, site and reaction document references, selected finish, required records and delivery destination. Identify loose heads, defined joint sets, adaptors and reserve components separately where they are requested.

Use the project, assembly and interface worksheets to preserve the purchasing basis, then identify any testing, installation or equipment services actually requested and their providers. Current availability, configurations, documents and commercial responsibilities are established in the accepted quotation and order. The handbook does not claim a stocked geometry, certified load table or a universal torque-capacity relationship.

For a delivery or record question, retain the order, item, part, lot and location references and provide the relevant actual source files, photographs or measurements. A clear enquiry helps the supplier and responsible reviewers address the same objects. Actual foundation engineering, installation, test execution and project acceptance remain tied to their selected documents and accountable parties.



Actual screw and head arrangement



Defined lead / extension assembly



Matched joint and complete-set contents

AI-generated product illustrations. No product approval or inspected-lot evidence is implied.

Contact METDAX

Email: ruofan1901@gmail.com | Handbook reference: MDX-TP-06. Include current product, site, interface and quantity references with the required physical supply scope.

Send your material schedule to METDAX