European Codes

Structural Eurocodes: group of standards for the structural and geotechnical design of buildings and of civil engineering works

European Committee on Standared - CEN

- **CEN/TC 250 / SC 7** - Geotechnical Design
- **CEN/TC 288** – Execution of Special Geotechnical Works
- **CEN/TC XYZ** – Geotechnical Investigations & Testing
- **ISO/TC182** – Geotechnical Engineering: Classification & Presentation

www.cenorm.be/sectors/construction/eurocode/htm

Formal processing

- Work on Draft Document
- Enquiry (national response)
- Formal vote
- Acceped as national standard (national applicationd document – NAD)
- 2 & 5 year review period

CEN/TC 250/SC 7- Geotechnical Design (ENV)

- ENV 1997 - Part 1: General Rules (most recent revision: 2000-04-18) final version for voting: 2002
- ENV 1997 - Part 2: Design assisted by laboratory testing
- ENV 1997 - Part 3: Design assisted by field testing

CEN/TC 288 – Execution of Special Geotechnical Works – Voted

Deal only with execution aspects

- EN 1536: Bored Piles
- EN 1537: Anchors
- EN 1538: Slurry Walls
- EN 12063: Sheet Piles
- EN 12699: Displacement Piles
- EN 12715: Injection/Grouting
- EN 12716: Jet Grouting

CEN/TC 288 – Execution of Special Geotechnical Works – Formal Vote

- WG 8: Micropiles (Formal vote: 2002)
- WG 9 - TG 1: Soil Nailing (Formal vote: 2002)
- WG 9 - TG 2: Reinforcement of fills (Formal vote: 2002)
- **WG 10: Deep Soil Mixing (Formal vote: 2004)**
- WG 11: Vertical Drains (Formal vote: 2004)
- WG 12: Deep Vibration (Formal vote: 2004)

www.geoforum.com/wg10

Deep Soil Mixing – WG 10

Dry and wet mixing methods

Main Document & Annexes

- Experts from 9 countries
- National Mirror Groups
- Communication preferbalby by Internet
- Drafting of document: Web platform
- 7 Meetings (2000: 2, 2001: 3, 2002: ?)
- Final draft in English, translated to French and German

CEN / TC 288 - Members WG 10

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14679

April 2005

ICS 93.020

English version

Execution of special geotechnical works - Deep mixing

Exécution des travaux géotechniques spéciaux - Colonnes de sol traité

Ausführung von besonderen geotechnischen Arbeiten (Spezialtiefbau) - Tiefreichende Bodenstabilisierung

This European Standard was approved by CEN on 28 February 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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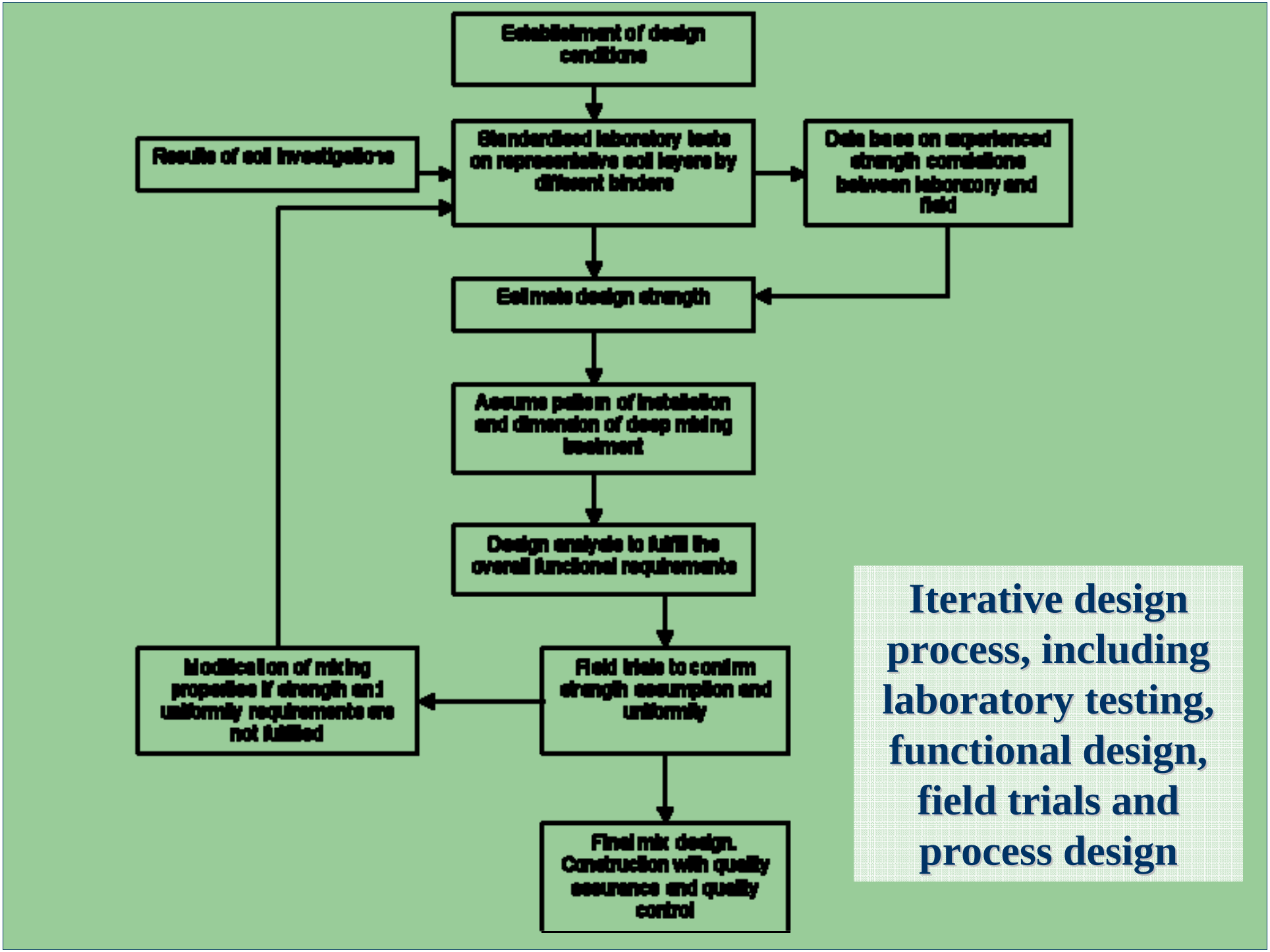
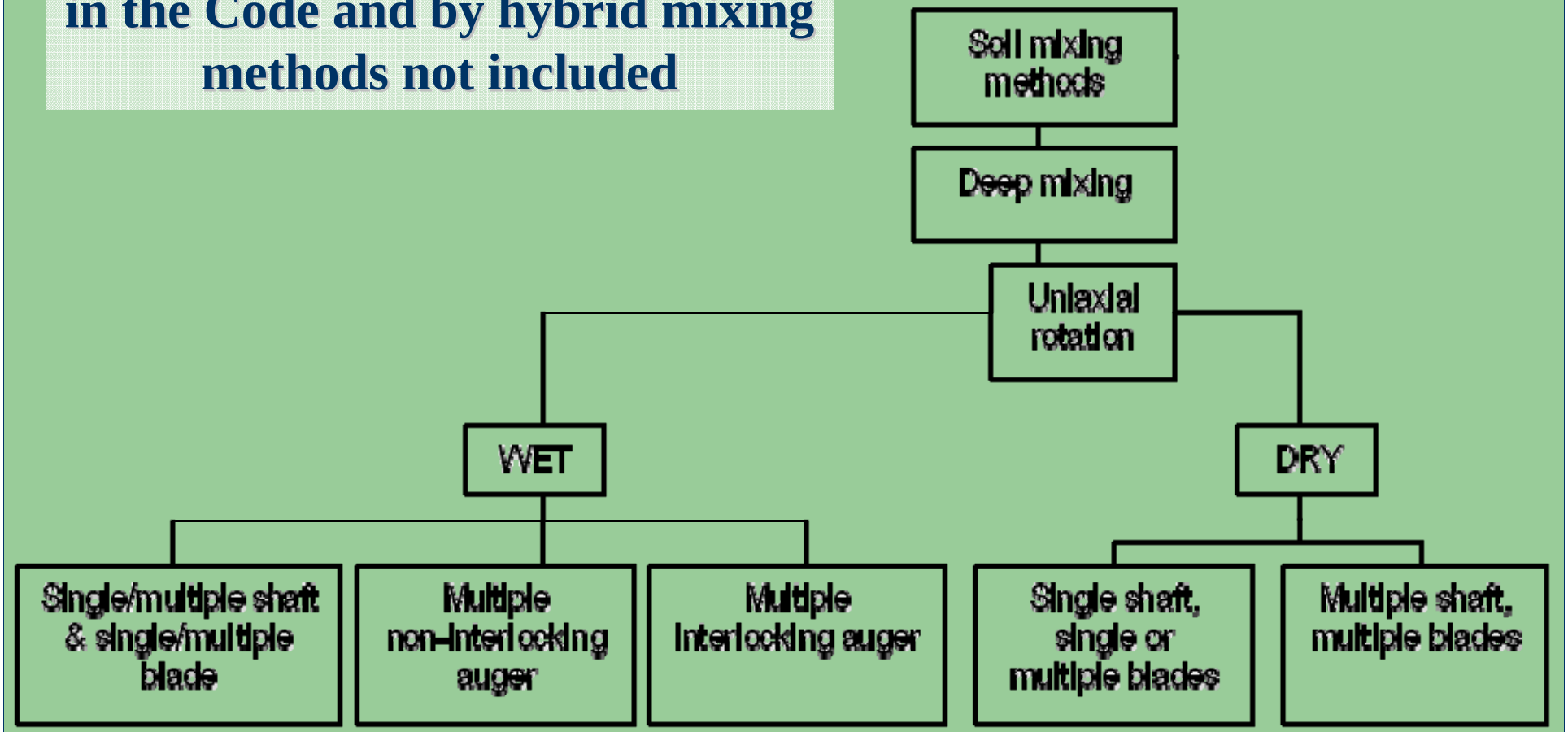
- Serviceability Limit State Desing

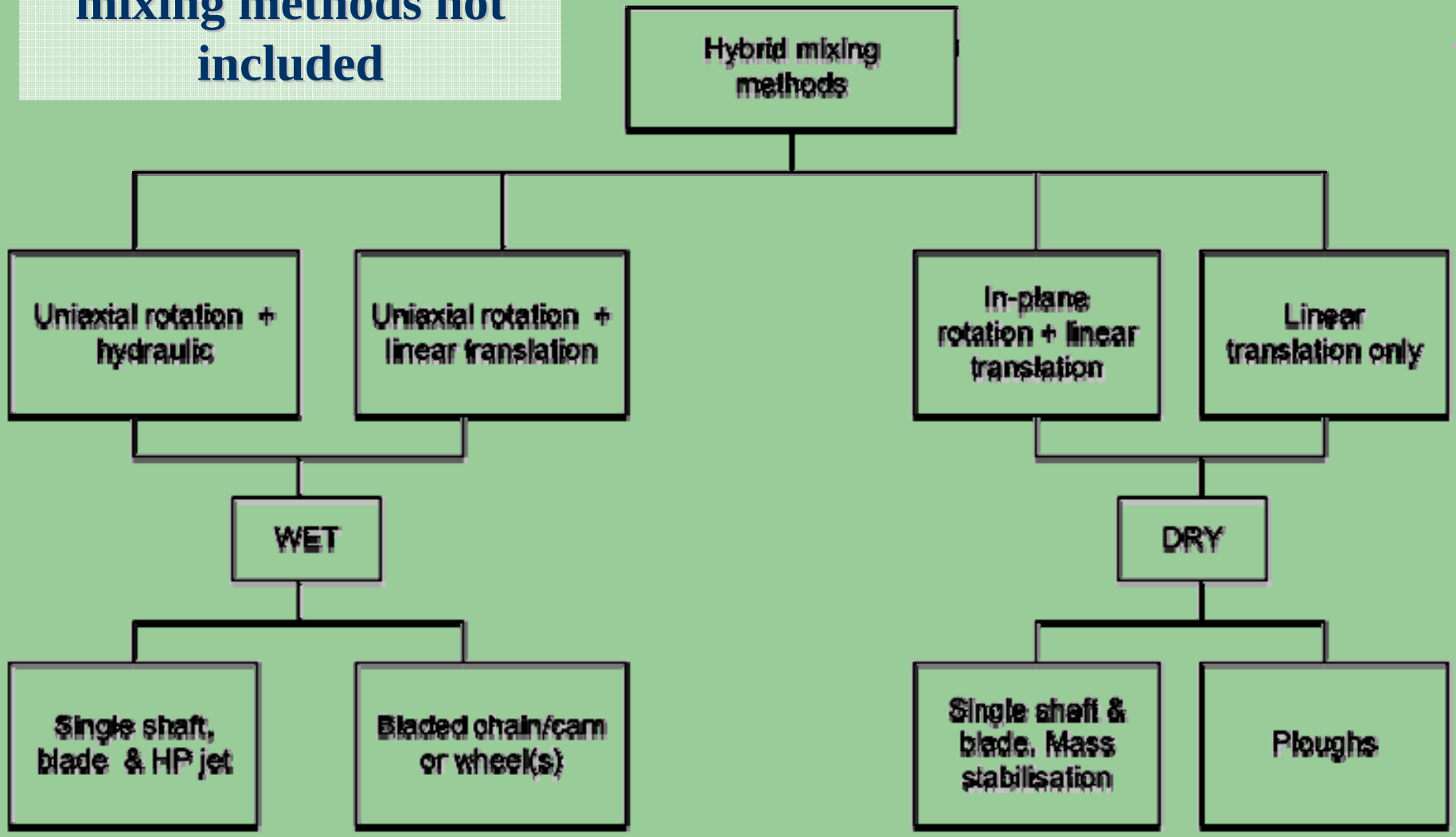


Iterative design process, including laboratory testing, functional design, field trials and process design

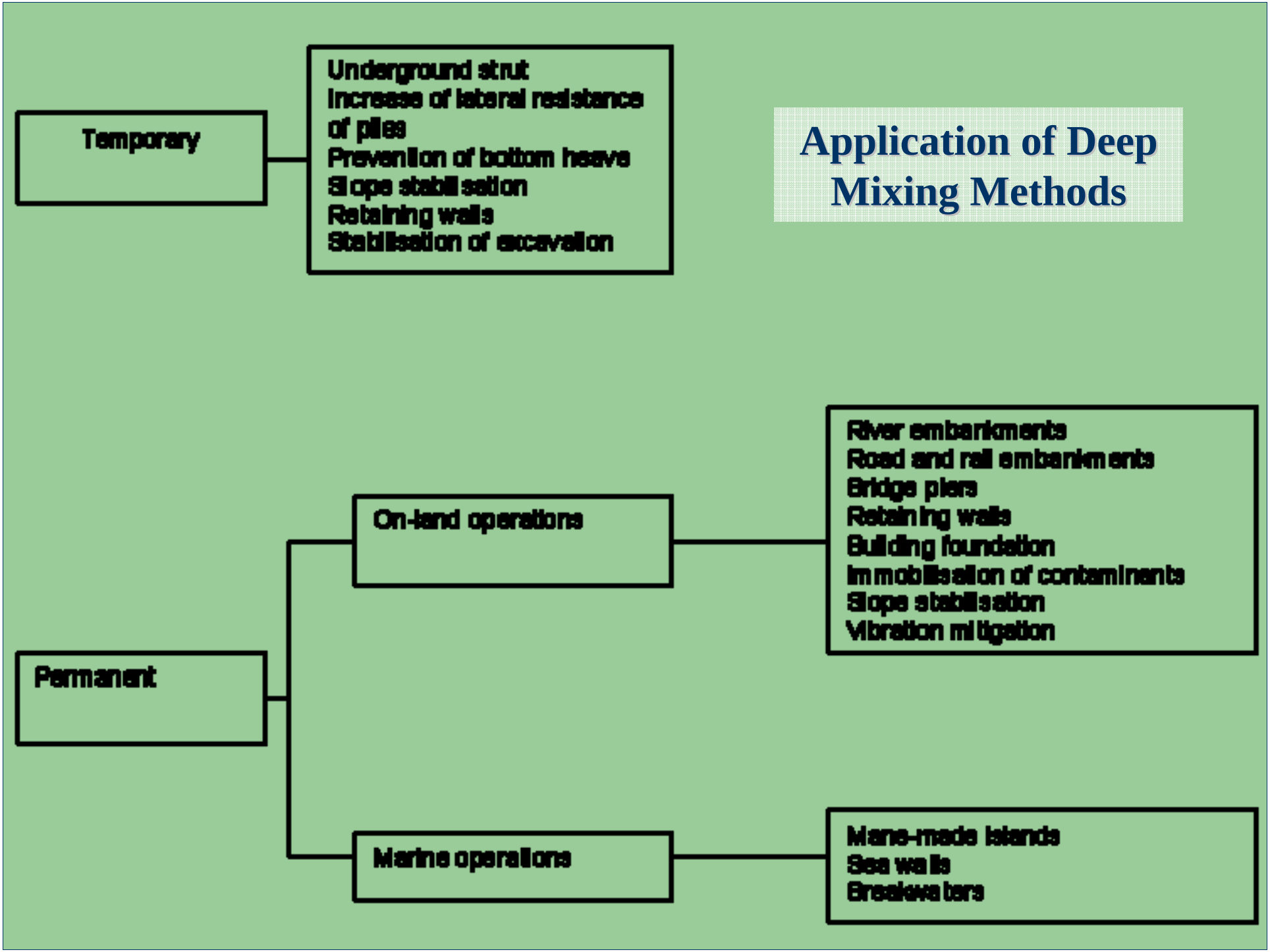
Classification of deep mixing equipment included in the Code and by hybrid mixing methods not included

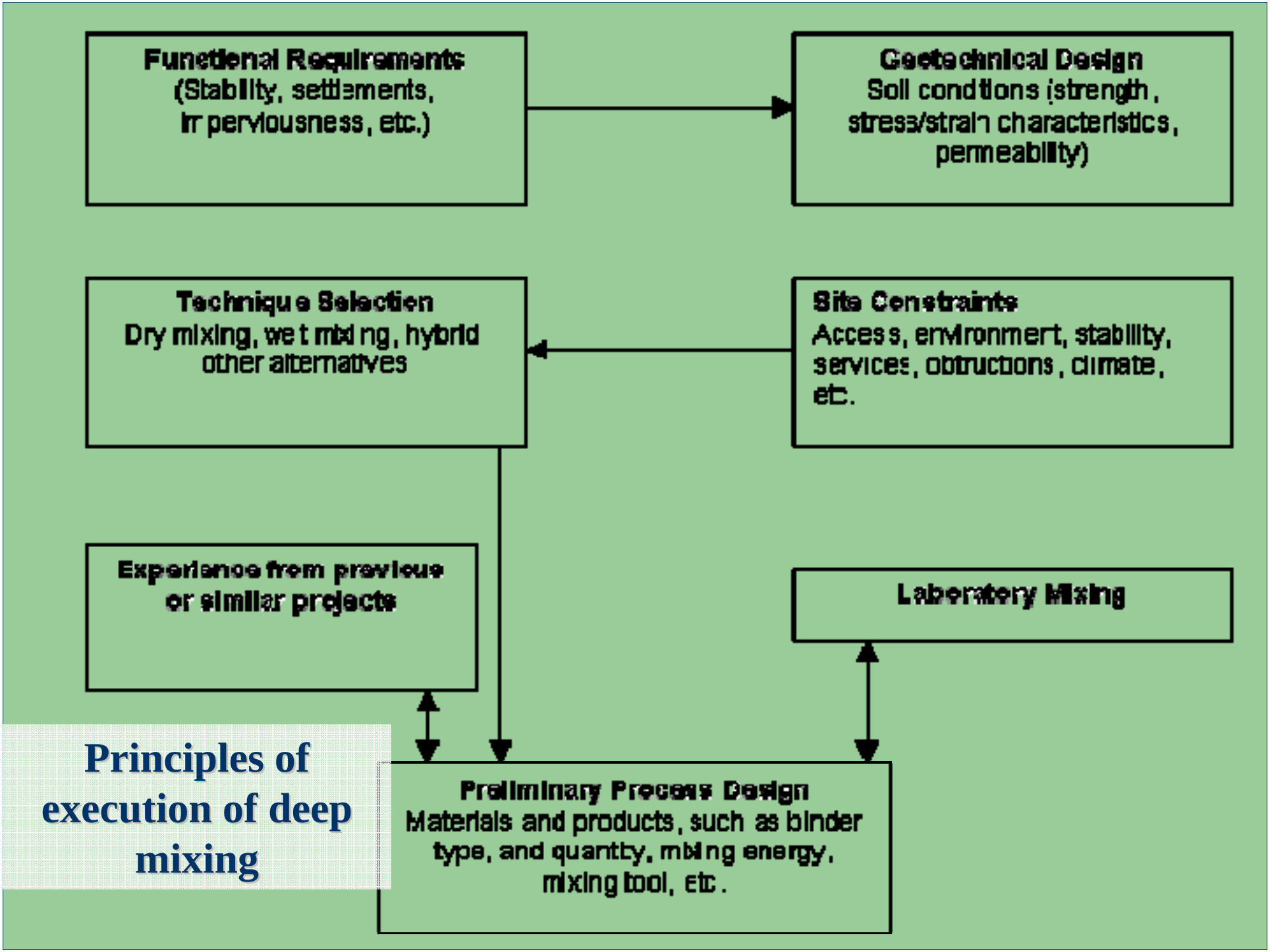


Classification of hybrid mixing methods not included



Application of Deep Mixing Methods





Principles of execution of deep mixing

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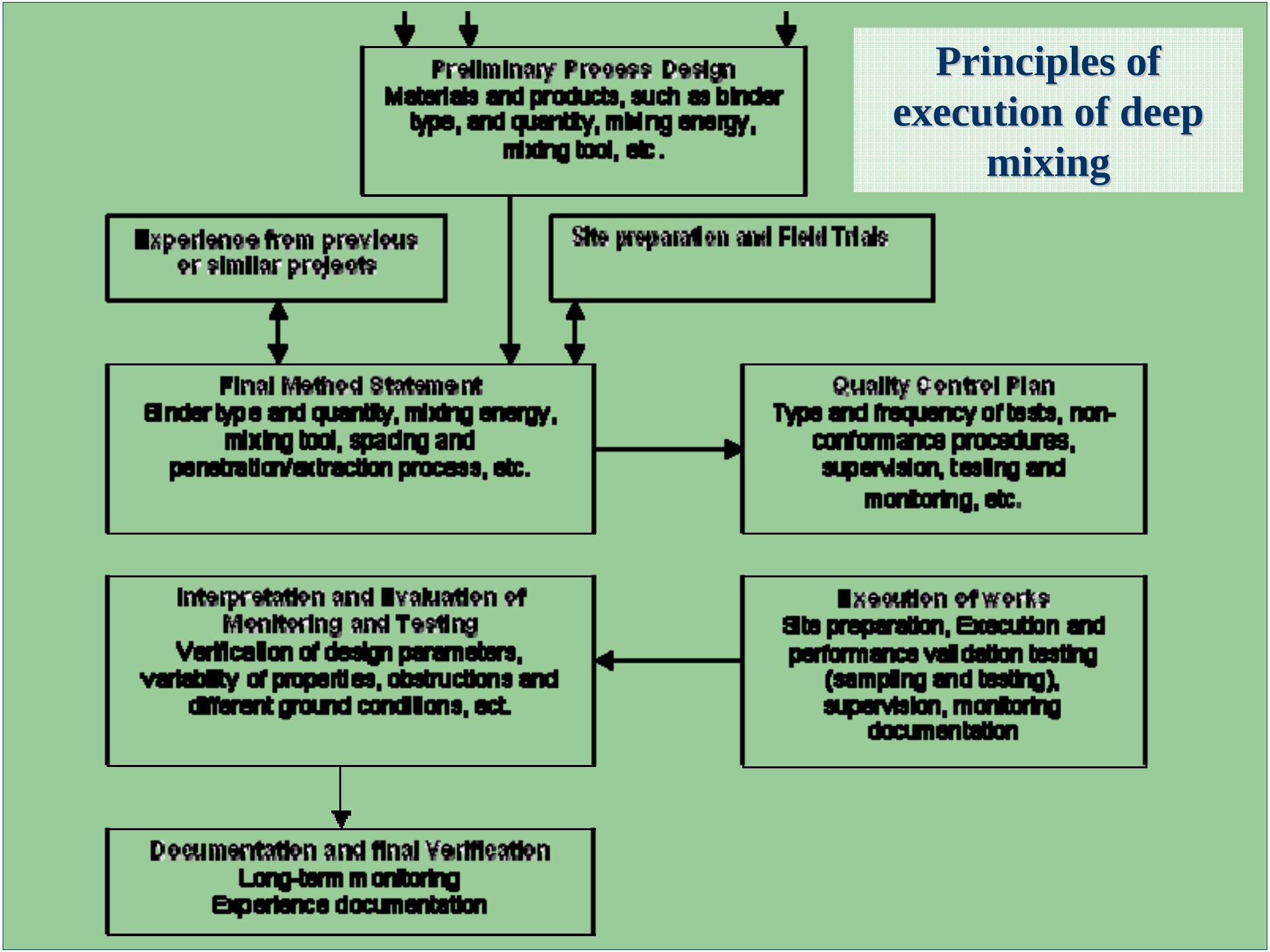
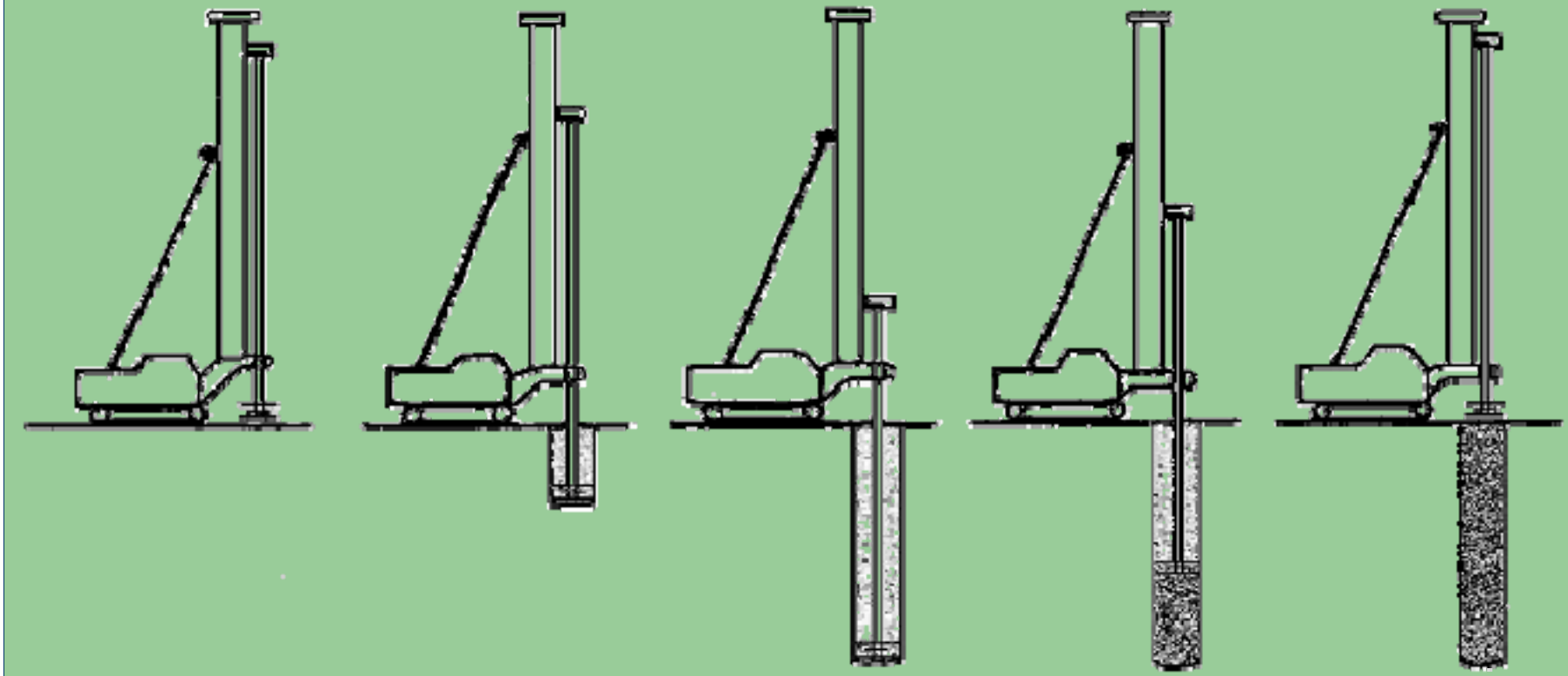
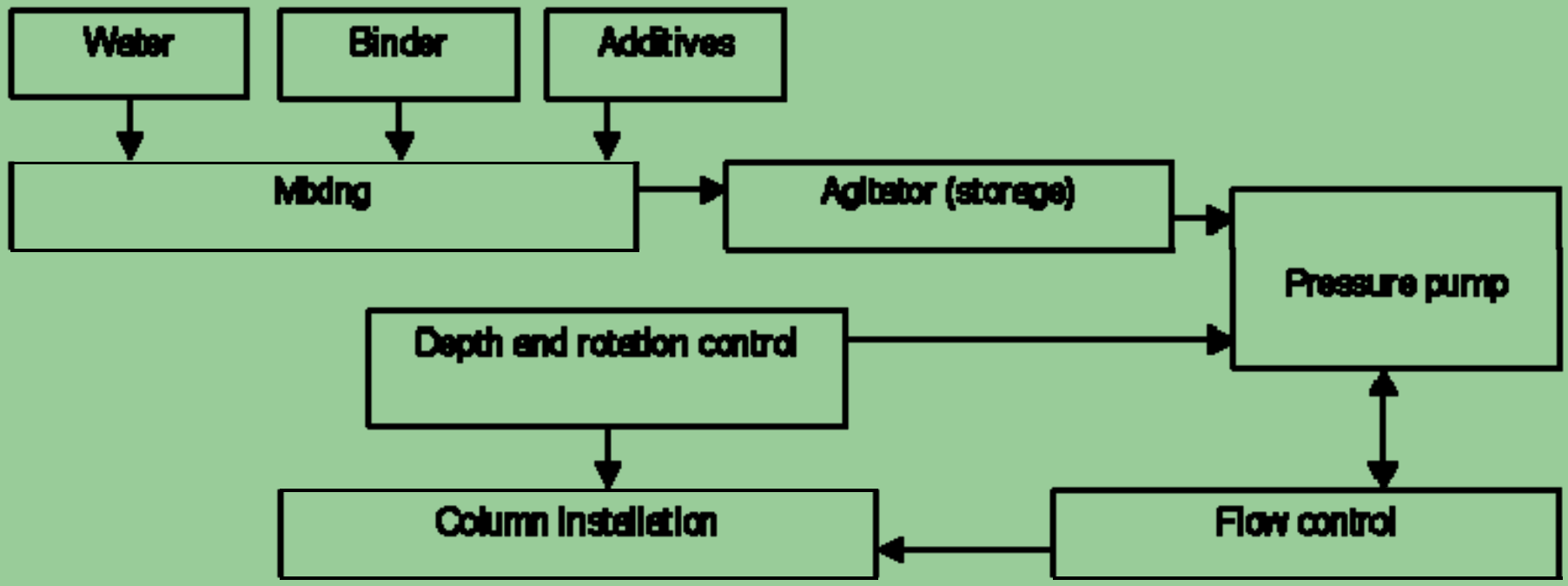


Sequence of installation



Flow chart for the execution of wet mixing



Major capacity and execution of European and Japanese wet mixing techniques

Details	On land, Europe	On land, Japan	Marine, Japan
Number of mixing rods	1–3	1–4	2–8
Diameter of mixing tool	0,4 m to 0,9 m	1,0 m to 1,6 m	1,0 m to 1,6 m
Maximum depth of treatment	25 m	48 m	70 m below sea level
Position of binder outlet	Rod	Rod and blade	Rod and blade
Injection pressure	500 kPa to 1 000 kPa	300 kPa to 600 kPa	300 kPa to 600 kPa
Amount of slurry storage	3 m^3 to 6 m^3	3 m^3	3 m^3 to 20 m^3

Examples of treatment patterns in wet mixing on land