SECTION 552:
Excavation Support & Protection Systems
The 1998 revisions:

- EI 98-033 and EI 98-034 issued specs and guidelines respectively for changes to Sections 206 & 552.

- Item 552.05: Safe Operation Sheet Piling was eliminated.

- As per OSHA, excavations greater than 5 feet must provide worker protection.
Excavation Support or Excavation Protection Systems

- Lay back Option
- Excavation Protection System
- Designed Support System
Design Process

Layback Option:
1. No structure or interference within the anticipated safe slope.
2. Excavation depth more than 5 feet but less than 20 feet.
3. No additional payment beyond typical excavation and backfill vertical pay lines, which must be shown on the contract plans.

Layback slopes for an excavation greater than 20 feet require a PE design and slope plus pay items should be shown in the contract plans.
IS SLOPE LAYBACK AN OPTION?

Varies based on OSHA

5 ft. < d* < 20 ft.
IS SLOPE LAYBACK AN OPTION?

YES

5 ft. < d* < 20 ft.
Section 206 Excavation Items provide for worker protection.

Item 206.XX
LAYBACK IS AVAILABLE

No additional payment beyond typical excavation vertical pay lines that are shown on the plans.
IS SLOPE LAYBACK AN OPTION?

10 feet

1 ½
IS SLOPE LAYBACK AN OPTION?

NO

Structure/Traffic/Utility/ROW is within 1 on 1 ½

Can EPS be used?
EPS: Excavation Protection
System, Item 552.16

- Excavation depth between 5 and 20 feet
- Adjacent structures must be:
  - At least 10 feet from edge of excavation
  - Or
  - Beyond 1 on 1 from bottom of excavation (whichever distance is less)
CAN EPS BE USED?

and

- Minor subsidence is determined to be acceptable

\[ 5 \text{ ft} < d^* < 20 \text{ ft} \]
A table should be shown on the contract plans indicating the locations where EPS is proposed for use.

CAN EPS BE USED?

10 feet

5 ft < d* < 20 ft

YES
CAN EPS BE USED?

EPS submitted for review of OSHA compliance should allow for Construction Equipment.

5 ft < d* < 20 ft
EPS: Excavation Protection System, Item 552.16

RESTRICTIONS

- EPS cannot be used when layback is possible.
- EPS is not used to support Stage Construction.
- EPS is not an acceptable substitution for designed sheeting.

WORKER PROTECTION ONLY
CAN EPS BE USED?

NO

Designed Support System is Required

5 ft < d* < 20 ft
Designed Support System

Used when one or more of the following applies:

- Excavation exceeds 20 feet.
- Adjacent structure is inside the 1 on 1 from the excavation bottom.
- Minimal subsidence is a problem.
Designed Support System

Types of Sheeting:

- Permanent: new material; remains in place
- Temporary: used material; is removed
- Interim: used material; remains in place
Designed Support System

Use Interim Sheeting when subsidence is an issue
Designed Support System

TOP ELEV.

SHEETING CUTOFF ELEVATION

SHEETING ITEM- 552.--
MINIMUM REQUIRED
SECTION MODULUS

TIP ELEVATION
Item 552.15 Interim Sheeting

Item 206.01 Structure Excavation
WALL LIMITS

Structure Excavation Item 206.01

Sheeting Limits

Typical
Sheeting may not be applicable due to:

- Soil type
- Depth of excavation
- Obstructions such as cobbles and boulders
- Shallow bedrock

We would design other types of support such as soldier pile and lagging wall to maintain the excavation.