REFERENCE: 2025 Denver Commercial Building Code (DCBC) Sections 130, 131, and 3307, and Chapter 1 of the 2025 Denver Residential Code (DRC)

A. PURPOSE OF POLICY

To establish the conditions, procedures, and specific permit and submittal requirements for the review and inspection of excavation sloping, benching, and shoring for any structure designed and permitted under the Denver Residential Code, including new construction, repairs, additions, and accessory structures.

B. POLICY OBJECTIVE

A well-designed excavation keeps workers safe from cave-ins, which can be deadly, and protects adjacent properties from damage and collapse. When a project requires excavation, adjacent public and private property shall be protected from damage. Protection is the responsibility of the person performing the excavation.

All residential projects are required to show their strategy for excavation. The applicant should work with their design team to determine the best excavation strategy, which may include excavation sloping, benching, shoring or a combination of these. The strategy for excavation will be site specific and will depend on the soils present at the site.

C. DEFINITIONS

See terms in Attachment 3, Example 1 and Example 2 for items including but not limited to top and bottom of excavation, property line, slope, depth of excavation, and edge of footing.

D. WHEN IS AN EXCAVATION PERMIT REQUIRED?

A permit for excavation is required for any building or structure designed and permitted under the Denver Residential Code, except as outlined below. See Sections E-H below for minimum submittal requirements for excavation sloping, benching, and shoring designs, and what must be submitted to document compliance with the following exceptions.

Exceptions with submittal requirements (Sections E-F):

1. Excavations greater than 4 feet in depth with slope cuts no steeper than 1.5 feet horizontal to 1 foot vertical where multiple structures are being built across multiple lots by one contractor, there are no structures on adjoining lots, all lots are owned by the same entity, and the bottom edge of the cut is at least as far from any adjacent structures and from any property line(s) not under the same ownership as the depth of the excavation
2. Excavations for retaining walls, walls, and fences other than post hole dug fences where the excavation is greater than 4 feet in depth.

Exceptions without submittal requirements:

1. Excavations with vertical or slope cuts that are 18 inches or less in depth.
2. Excavations with vertical or slope cuts that are more than 18 inches and no more than 4 feet in depth where the bottom edge of the cut is at least as far from adjacent structures and property line(s) of abutting properties as the depth of excavation.

3. Excavations abutting or extending into the right-of-way with vertical or slope cuts that are no more than 4 feet in depth and where the bottom edge of the cut is at least as far from adjacent structures as the depth of excavation.
4. Excavations for the following project types:
   a. Prefabricated window well units where:
      i. They are installed immediately after excavation,
      ii. They are no larger than 8 feet in depth, 6 feet in length as measured parallel to the structure, and 4 feet in width as measured perpendicular to the structure, and
      iii. The bottom edge of the cut is at least as far from adjacent structures as the depth of the excavation.
   b. Swimming pool, hot tub, and pond excavations where the excavation walls are used as the form for gunite or shotcrete walls, and where there are no structures or spoil piles located horizontally within a dimension equal to the depth of the excavation at that location.
   c. Meter pits, electrical, irrigation, utility boxes, and similar 'small areas' (50 square feet maximum footprint) where no more than 5-feet in total depth.
   d. Helical or push pier repairs where the pier is installed immediately after excavation, and the bottom edge of the cut is at least as far from adjacent structures and the property line as the depth of excavation.
   e. Individual concrete piers.
   f. Post-hole dug fences.
   g. Retaining walls, walls, and fences other than post hole dug fences where the excavation is 4 feet or less in depth.
   h. Similar excavations as approved by the Building Official.

E. GENERAL REQUIREMENTS

Projects that include sloping or vertical cuts, shoring, or benching designs must comply with these general requirements.

1. Method of Excavation

Excavation permit documents shall describe the excavation strategy used, which may include sloping or vertical cuts, benching, shoring or a combination of these. See design criteria and submittal requirements for each type of excavation in Sections F-H.

2. Excavation Restricted to Subject Property

All excavation shall stay within the limits of the subject property, except:

a. Where the excavation extends into the right-of-way. All excavations into the right-of-way are subject to approval from Department of Transportation and Infrastructure (DOTI).
b. Where a project has the same owner across multiple adjacent lots and an Affidavit for Excavation & Neighbor Notification for Applicants that Own Multiple Lots in a Row is provided (see Attachment 1).
c. When an Adjacent Property Owner Affidavit for Excavation is provided (see Attachment 2) to use an adjacent property for excavation or because the zone of influence or angle of repose extends into an adjacent property.

3. Engineer Required Documents

Many projects will require a Colorado professional engineer to prepare documents to show compliance with this policy, including preparation of a geotechnical investigation report and preparation of construction documents for underpinning, benching, and shoring designs.

4. Valuation Declaration

All projects requiring an excavation permit shall declare a valuation of the excavation work (including shoring, if applicable). When a project requires an excavation permit, the fee for each plan review and permit shall be based on the total valuation of all construction work for which the permit is issued.

a. Total valuation shall include the cost of all labor, materials, profit, and overhead.
b. If valuation is not provided, the determination of fees, value, or valuation shall be made by the building official.

F. SLOPING AND VERTICAL CUTS - DESIGN CRITERIA AND SUBMITTAL REQUIREMENTS

1. What is Sloping?

Sloping excavation is a method of cutting trench walls at an angle inclined away from the excavation. The specific sloping angle allowed depends on the soil type, the depth of excavation, and requirements of the geotechnical investigation report where required.

2. Sloping Design Criteria

a. Maximum sloping ratios shall comply with the following table:

Table: Maximum slope permitted

Type of Excavation	Depth of Excavation	Maximum Sloping Ratio Horizontal: Vertical	OSHA Soil Type Permitted (i)
Vertical Cut or Sloping	4’ or less	0:1	Any soil type
Sloping	Greater than 4’	1.5:1	Any soil type
		1:1	Type B
		0.75:1	Type A

i. Soil types A and B shall be verified by a geotechnical investigation report. If no geotechnical investigation report is provided, soil type C will be assumed.
ii. Review OSHA’s Excavation and Trenching Quick Reference guide for information on soil types.

b. Engineered underpinning design requirements for sloping designs shall be determined as follows:
i. Underpinning design may be required when the horizontal distance from an existing structure to the bottom edge of the excavation cut is less than the depth of excavation. A Colorado professional engineer must determine if underpinning is required and specifically explain the contractor’s excavation procedures.

3. Sloping Submittal Requirements

a. Construction Documents.

Provide drawings and section(s) that graphically show, label, and dimension all of the following:

i. Adjacent property lines.
ii. Structures that are within 10 feet of the top of the excavation, including structures on adjacent properties if within 10 feet.
iii. Edge of the footing or foundation.
iv. Elevation of existing grade.
v. Slope of excavation (e.g., 1.5 horizontal to 1 vertical).
vi. Extent of the excavation (location of vertical cut, or top of excavation slope and bottom of excavation slope).
    i. Dimension from the top of excavation to the bottom of excavation,
    ii. Dimension from the bottom of the excavation to the property line, and
    iii. Dimension from the top of the excavation to the property line.

b. Construction documents bearing the seal and signature of a Colorado professional engineer for underpinning designs, where required.

c. Geotechnical investigation report, where required:

Per table in section F.2.a above, for excavations greater than 4 feet in depth where the slope of the excavation is steeper than 1.5 feet horizontal to 1 foot vertical, a current geotechnical investigation report with an excavation/sloping evaluation bearing the seal and signature of a Colorado professional engineer is required.

d. Valuation declaration per section E.4 above.

e. Affidavit(s) where required, per section E.2 above.

G. BENCHING - DESIGN CRITERIA AND SUBMITTAL REQUIREMENTS

1. What is Benching?

Benching excavation is a method of creating horizontal levels or “steps” in the sides of a trench. Benching is permitted based on the specific soil conditions of the site, and therefore a geotechnical investigation report and engineered design will be required for all benching designs.

2. Benching Design Criteria

The following design criteria is provided for engineered benching designs. Any proposed benching designs exceeding these criteria will be subject to additional engineering plan review.

a. Benching designs must be prepared by a Colorado professional engineer.

b. The design criteria for a benching design are site specific and shall be presented by the engineer based on the recommendations of the current geotechnical investigation report. The submitted benching design shall match the recommendations of the geotechnical investigation report.

c. Any benching within 5 feet of a property line must have the vertical face of the bench located a minimum horizontal distance from the property line that is equal to the depth of the bench.

d. Engineered underpinning design requirements for benching designs shall be determined as follows:

i. If there is an existing structure within a horizontal distance from the vertical face of a bench that is equal to or less than the depth of the bench, the engineer must determine if underpinning is required and specifically explain the contractor's excavation procedures. Underpinning documents must be submitted, reviewed, and approved with the benching.

3. Benching Submittal Requirements

a. Construction Documents bearing the seal and signature of a Colorado professional engineer.
Provide drawings and section(s) that graphically show, label, and dimension all of the following:
   i. Adjacent property lines.
   ii. Distance of benching installation from the property lines
   iii. Height and depth of each bench.
   iv. Any structures that are within 10 feet of the top of the proposed benching, including structures on adjacent properties if within 10 feet.
   v. Edge of the footing or foundation.
   vi. Elevation of existing grade.

b. Geotechnical Investigation Report
A current geotechnical investigation report with an excavation/benching evaluation bearing the seal and signature of a Colorado professional engineer.

c. Valuation declaration per section E.4 above.

d. Affidavit(s) when required, per section E.2 above

H. SHORING - DESIGN CRITERIA AND SUBMITTAL REQUIREMENTS

1. What is Shoring?

Shoring is a temporary structure used to support the walls of an excavation. Shoring is an excavation strategy used when there is not enough space available on the property for sloping and/or benching. Any shoring design must be designed by a Colorado professional engineer. Shoring can be done using a variety of techniques, including piers, braced shoring, frames, sheet piles, beams with lagging, and tie back shoring. This policy specifically addresses concrete pier shoring; however, any shoring design may be submitted for review.

2. Design Criteria for Concrete Shoring Piers

The following design criteria is provided for engineered shoring designs using concrete piers. Alternate shoring designs, including pier designs exceeding these criteria, will be subject to additional engineering plan review.

a. Shoring designs must be prepared by a Colorado professional engineer.

b. Shoring design shall reference and be based on the current geotechnical investigation report.

c. Concrete piers shall be spaced not more than 3'-0" on center.

d. Concrete piers must be at least 10" diameter and reinforced based on design analysis by a Colorado professional engineer.

e. The pier embedment, measured from the lowest point of the excavation to the bottom of the pier, must be at least equal to the depth of the excavation. For example, if the excavation is a depth of 10 feet, the pier must have at least 10 feet embedment below the lowest excavation point. Note: under certain soils conditions and water table levels this may not be adequate and requires verification from the engineer.

3. Shoring Submittal Requirements

a. Construction Documents bearing the seal and signature of a Colorado professional engineer.
   Provide drawings and section(s) that graphically show, label, and dimension all of the following:
   i. Adjacent property lines.
   ii. Distance of shoring installation from property lines.
   iii. Any structures that are within 10 feet of the proposed shoring, including structures on adjacent properties if within 10 feet.
   iv. Elevation of existing grade.
   v. Depth of excavation.
   vi. Depth of concrete shoring pier embedment, measured from lowest point of excavation to the bottom of the pier.
   vii. Diameter of concrete shoring piers.
   viii. Distance between concrete shoring piers measured to the center of each concrete pier.
   ix. Reinforcement design and placement.

b. Geotechnical Investigation Report
   A current geotechnical investigation report with an excavation/shoring evaluation bearing the seal and signature of a Colorado professional engineer.

c. Special Inspector. Provide name and phone number of the designated special inspector or Colorado professional engineer that will be performing inspections of the shoring installation per section K.3 below. The special inspector or Colorado professional engineer performing the inspection shall have competence and relevant experience or training.

d. Valuation declaration per section E.4 above.

e. Affidavit(s) when required, per section E.2 above.

I. HOW TO SUBMIT:

1. One- and Two- Family Dwellings and their Accessory Structures

For one- and two- family dwellings and their accessory structures, submittal requirements for excavation, sloping, benching, or shoring shall be included with the Building LOG submittal for the structure's residential construction permit.

2. IRC Townhouses and their Accessory Structures

For townhouses and their accessory structures, submittal for a permit for excavation, sloping, benching, or shoring shall be submitted as a separate Building LOG from the residential construction permit submittal.

J. PERMIT APPROVAL AND ISSUANCE

1. One- and Two- Family Dwellings and their Accessory Structures

a. The excavation permit will be approved concurrently with the construction permits for the entire project. The excavation permit is issued separately and prior to the construction permits.

b. The excavation permit must obtain final sign off from the Building Inspection Division Construction Inspector before the permit for construction is issued.

2. IRC Townhouses and their Accessory Structures

The excavation permit for townhouse projects is approved and issued independently from the construction permits. Approval and issuance may be prior to the approval of the construction permit.

K. INSPECTION REQUIREMENTS:

1. Pre-Construction Meeting

Prior to excavation for sloping, benching, or shoring a pre-construction meeting is required. Before starting any excavation, sloping, benching, or shoring work, the contractor shall meet the Building Inspection Division Construction inspector on site to review construction and excavation procedures, including fencing, signage, and compliance with the proposed excavation, sloping, benching, or shoring plan.

2. Notification of Construction Activity

Notification of construction activity is required for all excavation, sloping, benching and shoring that requires an excavation permit. Notification shall be provided in accordance with Denver Building Code Policy DCBC 3307.1.1. Notification is required by posting, and by written notice where applicable.

3. Special Inspections

Special inspection is required in accordance with DCBC Section 1704 and IBC Chapter 17 for all shoring that requires a permit for excavation. A Colorado professional engineer may act as the special inspector, provided they have the competence and relevant experience or training to perform special inspections. The owner must hire the special inspector.

4. Final Inspection for Engineered Shoring Design

Once the required shoring has been installed, inspected by the special inspector, given a minimum time to cure, and the excavation is completed; schedule a final inspection with the Building Inspection Division online through the ePermits portal (denvergov.org/epermits). The special inspector shall provide a report outlining their inspection of the shoring installation with their signature, which shall be provided to the construction inspector at the time of final inspection. Alternatively, the contractor may upload the report with signature to the permit record in the ePermits portal prior to requesting the final inspection.

5. Final Inspection for Engineered Sloping or Benching Design

Once all sloping or benching is completed, schedule a final inspection with the Building Inspection Division online through the ePermits portal (www.denvergov.org/epermits).

L. ATTACHMENTS

1. Affidavit for Excavation & Neighbor Notification for Applicants that Own Multiple Lots in a Row
2. Adjacent Property Owner Affidavit for Excavation
3. Example Excavation Plans and Sections
   a. Example 1 – Excavations with slope cuts no steeper than 1.5 feet horizontal to 1 foot vertical.
   b. Example 2 – Vertical excavation cut for depths 4 feet or less.

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Chief Building Official

END OF DOCUMENT

AFFIDAVIT FOR EXCAVATION & NEIGHBOR NOTIFICATION

FOR APPLICANTS THAT OWN MULTIPLE LOTS IN A ROW

PROPERTY OWNER INFORMATION		
Property Owner	Name	
	Phone	
	Email	
	Address	
Contractor	Name	
	Contact	
	Phone	
	Email	
	Address	

ADDRESSES OWNED BY THE SAME OWNER		
Property Addresses (Limit this form to addresses on one block)	1.	
	2.	
	3.	
	4.	
	5.	
	6.	
	7.	
	8.	
	9.	
	10.	

OWNER ACKNOWLEDGMENT – AFFIDAVIT AND NEIGHBOR NOTIFICATION	
As the owner of multiple lots in a row, this form shall serve as: 1. Proof of ownership of multiple lots in a row; 2. Neighbor notification per DCBC Section 3307.1.1; and 3. Permission to excavate on the properties listed above.	
Owner / Owner's Representative Signature	
Date	

REQUIRED ATTACHMENTS
The following documents are required to be submitted to prove ownership of the adjacent property: • A copy of the adjacent property title if the owner information differs from that shown in the Denver Property Taxation and Assessment System. • If the adjacent property is owned by a corporation, company or trust, the owner's representative may sign this document.

ADJACENT PROPERTY OWNER AFFIDAVIT FOR EXCAVATION

EXCAVATION, SLOPING, BENCHING & SHORING

SUBJECT PROPERTY INFORMATION		
Property Address		
Property Owner	Name	
	Phone	
	Email	
	Address	
Contractor	Name	
	Contact	
	Phone	
	Email	
	Address	

ADJACENT PROPERTY OWNER INFORMATION		
Property Address(es)		
Property Owner	Name	
	Phone	
	Email	
	Address	

ADJACENT PROPERTY OWNER ACKNOWLEDGEMENT

As the adjacent property owner:

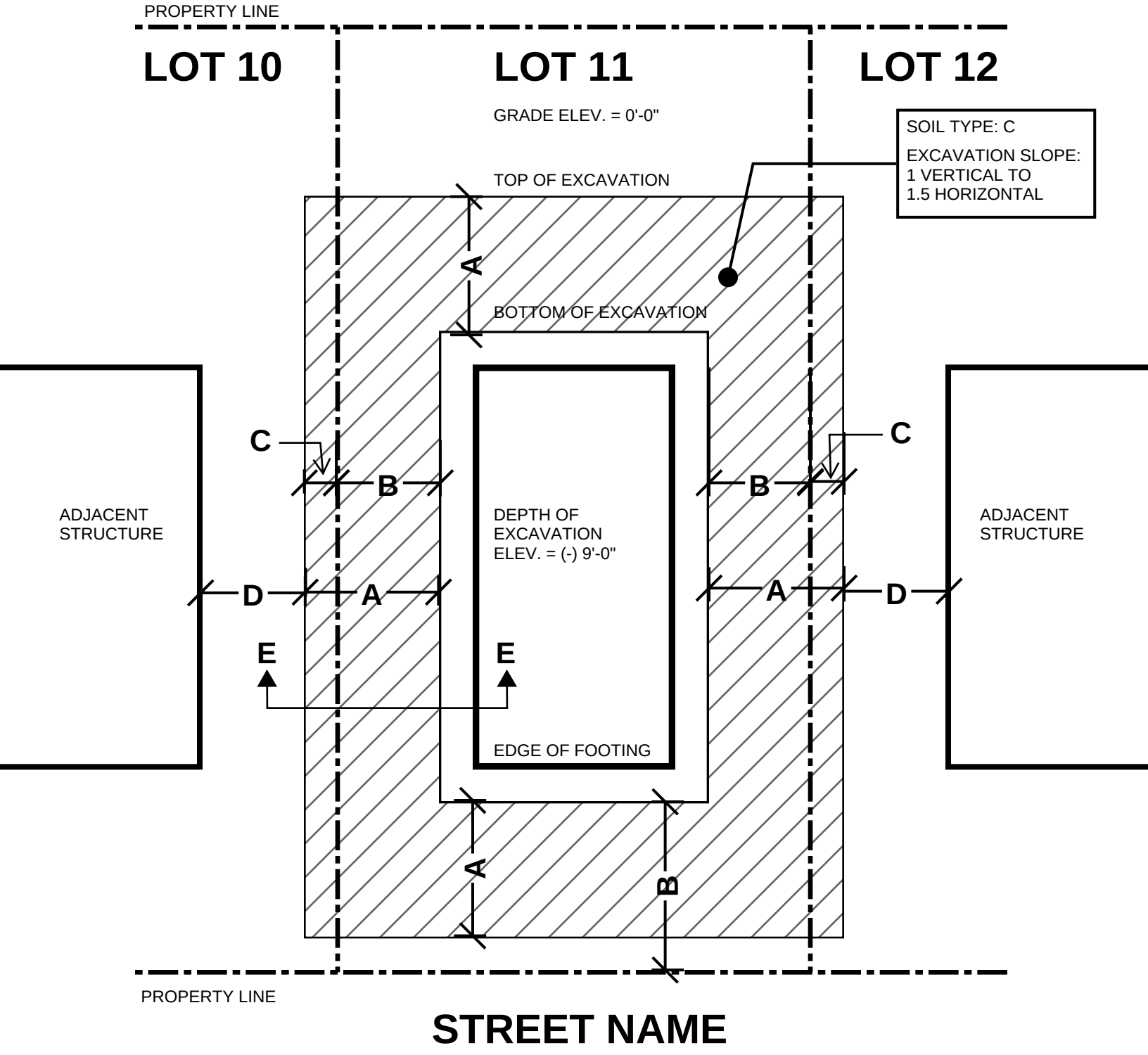
- I acknowledge that I am sole owner or one of the owners of the adjacent property as shown in the Denver Property Taxation and Assessment System at denvergov.org/property/ or as shown on the property title.
- I acknowledge that I may have this agreement notarized, but the City and County of Denver will not require it to be notarized.
- I have reviewed the excavation construction documents submitted by the subject property owner and understand the extent of the excavation.
- I grant permission for the subject property owner to excavate onto my property to the extent shown on the excavation construction documents.
- I understand that any dispute arising from this acknowledgment is a civil matter.

Owner / Owner's Representative Signature	
Date	

REQUIRED ATTACHMENTS

The following documents are required to be submitted to prove ownership of the adjacent property:

- A copy of the adjacent property title if the owner information differs from that shown in the Denver Property Taxation and Assessment System.
- If the adjacent property is owned by a corporation, company or trust, the owner's representative may sign this document.



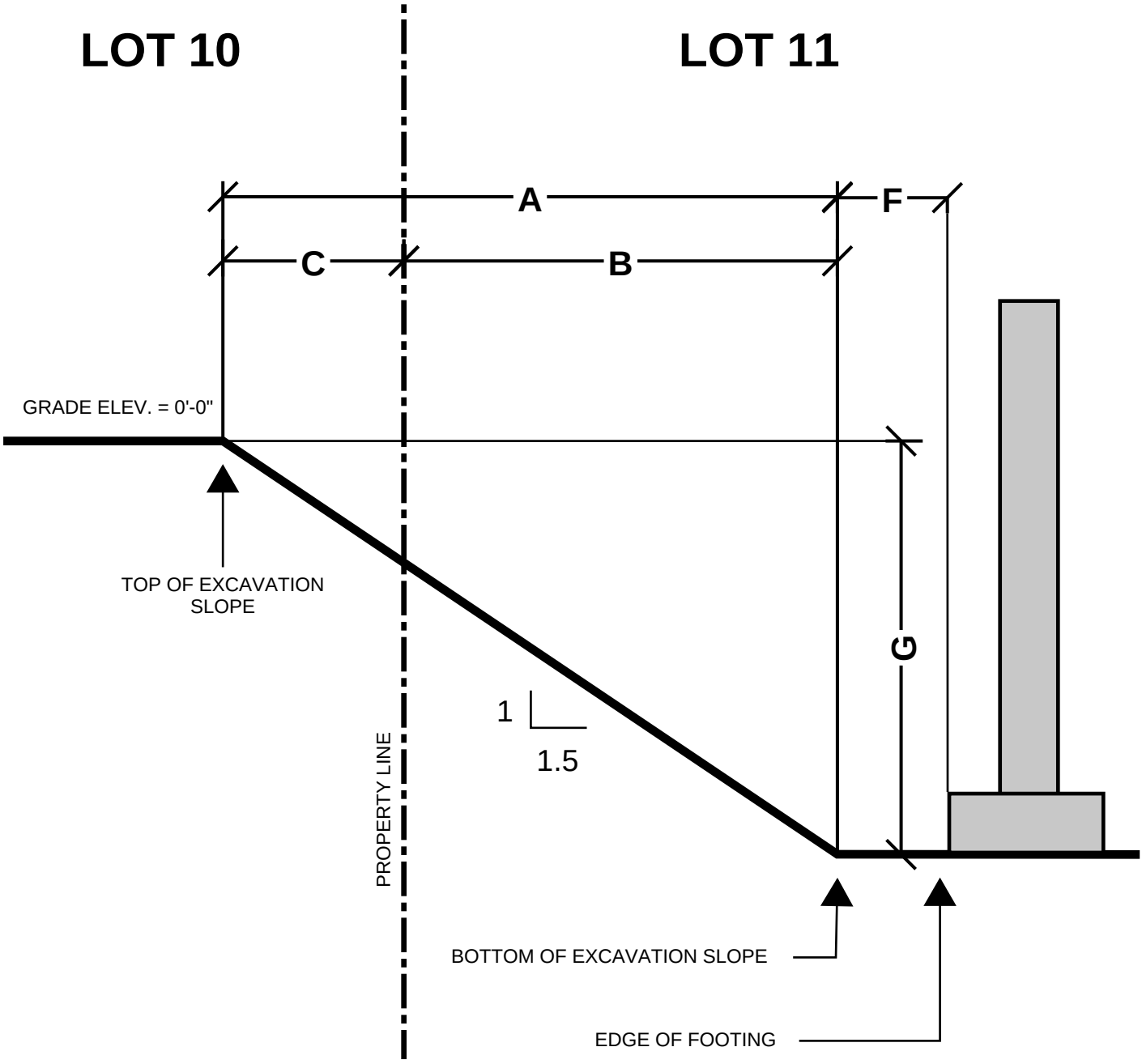
N

EXAMPLE 1 - EXCAVATION PLAN

ADDRESS
SCALE: NTS

DIMENSION LEGEND:

A - WIDTH OF EXCAVATION = DEPTH OF EXCAVATION X 1.5
B - BOTTOM OF EXCAVATION TO PROPERTY LINE
C - PROPERTY LINE TO TOP OF EXCAVATION
D - TOP OF EXCAVATION TO STRUCTURES WITHIN 10 FEET OF EXCAVATION

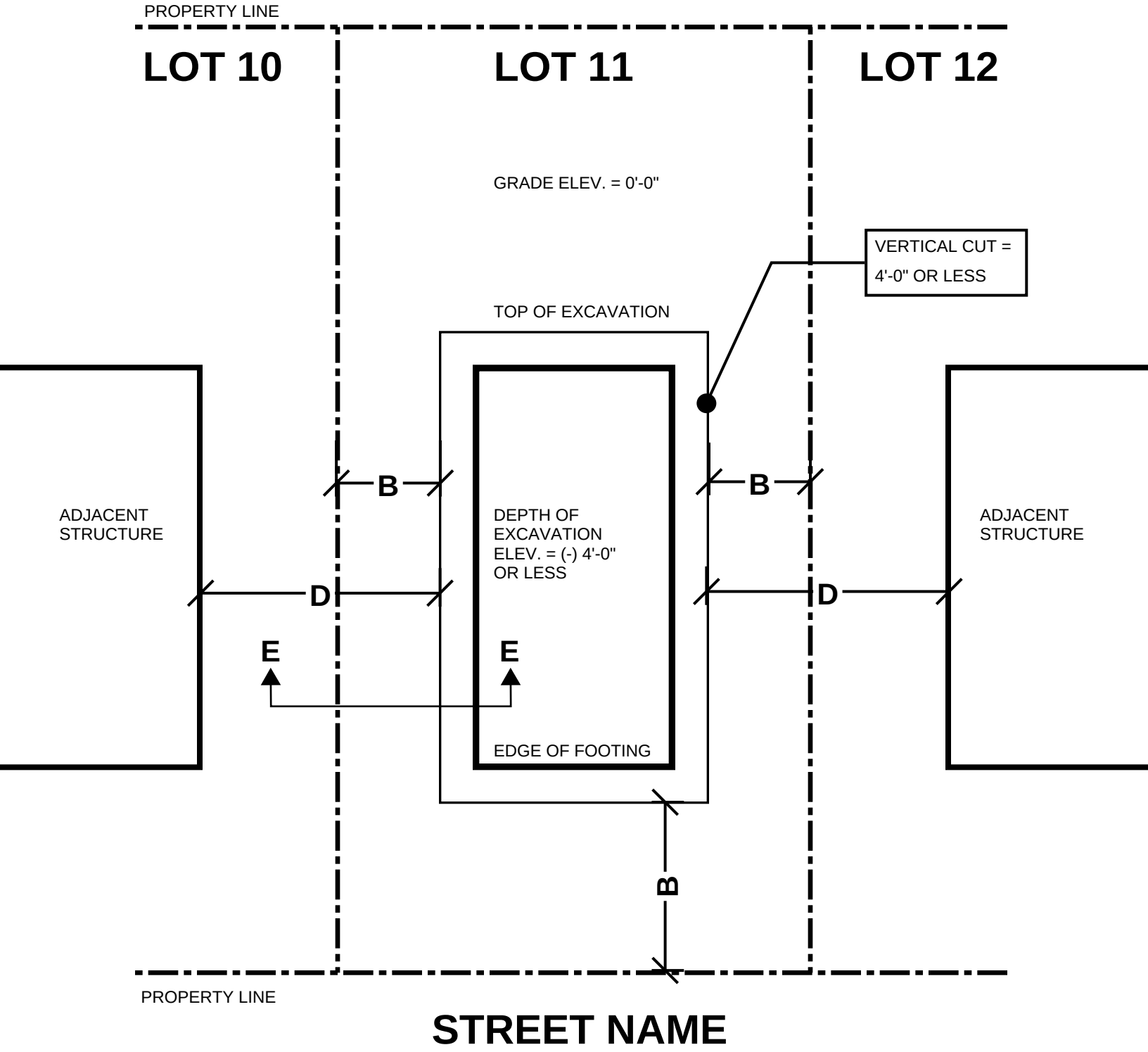


EXAMPLE 1 - SECTION E-E

ADDRESS
SCALE: NTS

DIMENSION LEGEND:

A - WIDTH OF EXCAVATION = DEPTH OF EXCAVATION X 1.5 HORIZONTAL
B - BOTTOM OF EXCAVATION TO PROPERTY LINE
C - PROPERTY LINE TO TOP OF EXCAVATION
F - BOTTOM OF EXCAVATION TO EDGE OF FOOTING
G - DEPTH OF EXCAVATION



STREET NAME

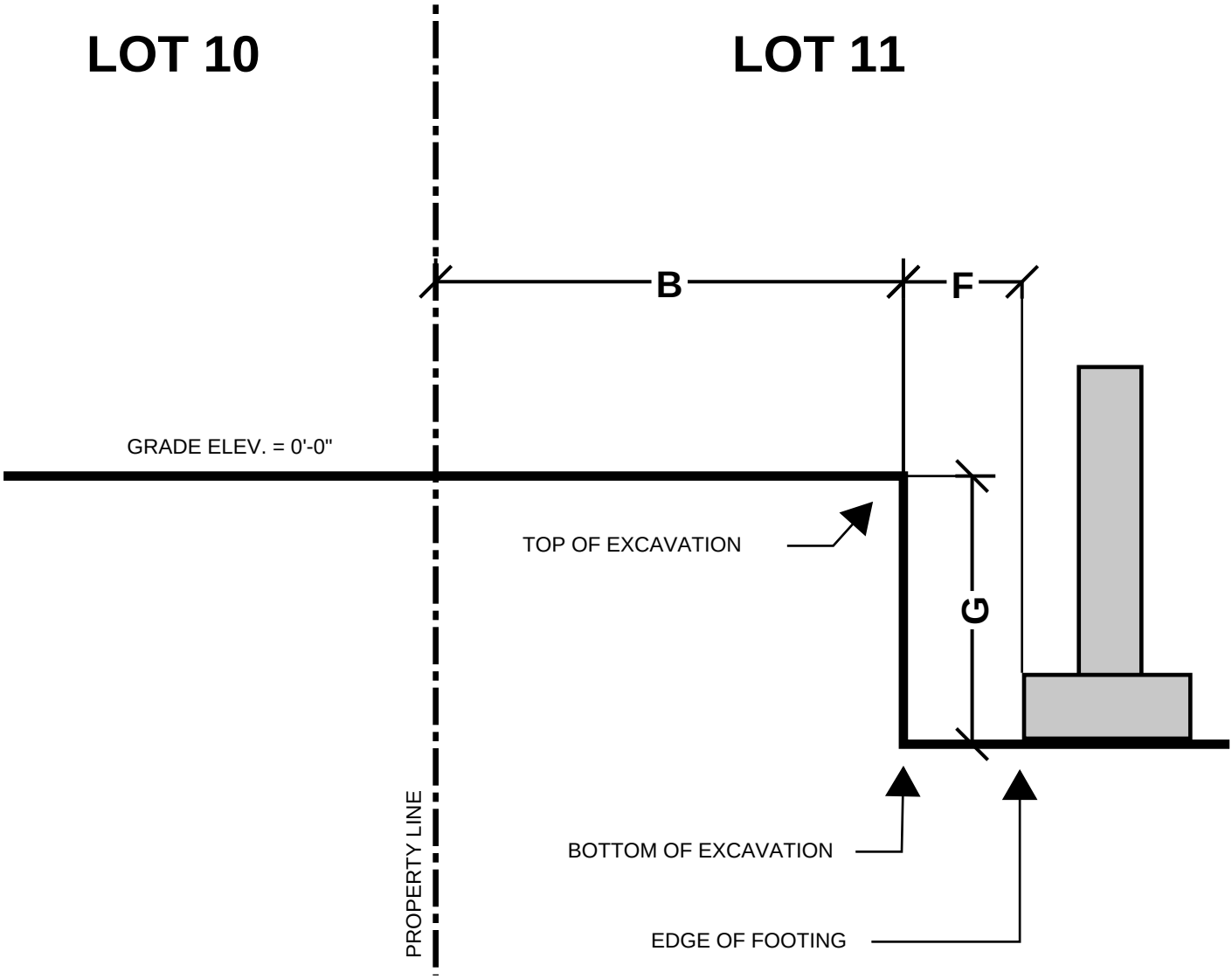
N

EXAMPLE 2 - EXCAVATION PLAN

ADDRESS
SCALE: NTS

DIMENSION LEGEND:

B - TOP OF EXCAVATION TO PROPERTY LINE
D - TOP OF EXCAVATION TO STRUCTURES WITHIN 10 FEET OF EXCAVATION



VERTICAL CUTS 4'-0" OR LESS ARE PERMITTED IF THE DISTANCE FROM THE PROPERTY LINE TO THE TOP EDGE OF THE EXCAVATION CUT IS GREATER THAN OR EQUAL TO THE DEPTH OF EXCAVATION.

EXAMPLE 2 - SECTION E-E

ADDRESS
SCALE: NTS

DIMENSION LEGEND:

B - TOP OF EXCAVATION TO PROPERTY LINE
F - VERTICAL EXCAVATION CUT TO EDGE OF FOOTING
G - DEPTH OF EXCAVATION = 4'-0" OR LESS