City of Walnut Creek

Development Review Services

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Submittal Requirements for Retaining Walls

Walls retaining soil require a building permit issued from the Building Division of the Community Development Department or site development permit from the Engineering Division of Public Works when any of the following conditions exist:

a) The retaining wall is over 4 feet in height when measured from the bottom of the footing to the top of wall.
b) The retaining wall supports a surcharge load
c) The retaining wall receives loading from a building or structure directly or indirectly (e.g., via passive soil pressures).
d) The retaining wall system imparts loading onto a building or other structure, whether the building or structure is new or existing.
e) The retaining wall supports a substantially solid fence (fence portion more than 3 feet high) that adds wind loading and/or seismic loading onto the retaining wall. Chain link fences without wood slats, for example, would not trigger this condition.
f) The retaining wall impounds Class I, II or IIIA flammable liquids (see CBC Chapter 2 for definitions).

Various retaining wall examples are shown in Figures 1 through 3.

- Figure 1 shows examples of retaining walls requiring a building permit
- Figure 2 shows examples of retaining walls requiring site development permit
- Figure 3 shows examples of retaining wall not requiring a building or site development permit.

In general, a building permit is required if the wall receives loading from or imparts loading onto a building or structure. If not, a site development permit is required if the wall height exceeds 4 feet and/or is surcharged by non-structures (e.g., vehicles, parking areas, sloping ground surface, or soil pressures exerted from adjacent retaining walls).

Retaining walls shall be designed by a licensed architect or a registered civil or structural engineer. A complete engineering evaluation shall be submitted to the city addressing the stability of the retaining wall and the structural integrity of the retaining wall system. Where the retaining wall influences the loads on a building, the engineering evaluation shall also address the effect of the loads onto the building. In all cases, and especially where tiered retaining walls are proposed, the analysis shall include complete free-body diagrams of the retaining walls showing what loads are acting onto the retaining wall system and what loads are resisting the applied forces. The calculations shall clearly state all assumptions and list the soil parameters used in the design. Design criteria and materials evaluation shall be that contained in the California Building Code (CBC).

Retaining walls are often used to reduce site slopes, create level building pads, and stabilize slopes to allow construction on or adjacent to the slope. If a retaining wall is used at the toe of the slope, then the height of the slope, 'H' as used in CBC Section 1808.7 is measured from the top of the retaining wall to the top of the slope. In this instance, the building or structure placement relative to the retaining wall must be carefully evaluated. Depending on the placement of the building or structure, the following items must be addressed in the evaluation and analysis: slope drainage, erosion control, potential for shallow failures, potential soil creep, potential settlement and the effect of installing new building or structure footings in areas which require passive soil pressures to resist retaining wall loads. If no retaining walls are used and the site slopes exceed 1 vertical unit in 3 horizontal units, then the provisions of CBC 1808.7 must be addressed for a proposed building or structure to be constructed on or adjacent to the slope.

If you have any questions about the submittal requirements for retaining walls permitted by the Building Division, please contact a plan check engineer at (925) 943-5825 or by email at CDD-BldgPR@walnut-creek.org. If you have questions about the submittal requirements for retaining walls permitted by the Engineering Division, please contact the duty engineer at (925) 943-5839 or by email at dutyengineer@walnut-creek.org.

Drawings Required

1. Plot Plan/Title Sheet
   a) Identification of the property address and owner of the property
   b) Identify parcel number
   c) Property lines defining the parcel
   d) All recorded or known easements
   e) All existing buildings and accessory building footprints
   f) Location and alignment of the retaining wall dimensioned from the property lines and any easements sufficient to establish location of wall by survey.
   g) All trees and their associated drip lines, including trees from adjacent property which have drip lines onto the subject property
   h) Location and layout of any private sewer disposal system, including septic tank and leach field routing.
   i) Location of any potable water wells.
   j) All on site utilities
   k) Top and bottom elevations of wall at the beginning and end of wall and at any grade change.
   l) Set backs
   m) North arrow and reference north

2. Grading and Drainage Plan
   a) Existing and finish grade contours above and below the wall
   b) Site sections showing toes and tops of slopes
   c) Location and alignment of the retaining wall(s)
   d) Drainage system routing, termination details and specifications

3. Structural Plans
   a) Elevation profile of the retaining wall, fully dimensioned and stationed from skewed corners, with elevations shown for top of wall, top of footing, and bottom of footing relative to a specified bench mark, and with finished soil grade elevations clearly designated along the uphill and downhill sides.
   b) Cross sections thru the wall at each different wall and/or footing section, with uphill slopes shown to H/3 beyond the top of the slope and downhill slopes shown to H/2 beyond the toe of the slope, where the "toe" and "top of slope" and 'H' are defined by Figure 1808.7.1 of the CBC and CBC Section 1808.7.
   c) Blow-up details of critical areas, such as piers, intersecting elements, and skewed or 90-degree corner conditions.
   d) Complete material specifications.
   e) Listing of items requiring special inspection.
   f) Structural plans shall be stamped and signed by an architect or registered civil or structural engineer licensed in the State of California.

Structural Calculations

Structural calculations stamped and signed by an architect or a registered civil or structural engineer licensed in the State of California are required to be provided.

Special Inspection Requirements

Where special inspection is required, a completed special inspection program must be submitted prior to issuance of the building permit. Special inspection program forms are available on the Building Division website: https://www.walnut-creek.org/home/showpublisheddocument/4482/635695162011730000

Foundation/Soils Report

A foundation/soils report will be required to establish design criteria when any of the following conditions exist:

1. Where assumed design soil pressures used are less than 75 psf per foot of depth. This minimum pressure requirement was established for a typical restrained or partially restrained wall, assuming clay soil and a fully drained condition.
   Exception: Retaining walls that meet all of the following conditions:
   a) do not support buildings or structures other than a fence,
   b) do not have intersecting-skewed or right-angle wall intersections, and
   c) are allowed to rotate to create active pressure conditions.
   In this instance, the design soil pressures must be at least 30 psf per foot of depth, per CBC Section 1610.1 and Table 1610.1.
2. When tiered retaining walls are used.

3. When undrained soil conditions are proposed.
4. When an alternative setback or clearance, as provided under provisions of CBC 1808.7.5, is being used.
5. The engineer or architect incorporates allowable resistance design values greater than values corresponding to Class of Materials Item 5 of CBC Table 1806.2.
6. The site is located within an Alquist-Priolo Special Studies Zone.
7. The site has a history of soil related problems (e.g., creep, settlement, lateral spreading, etc.).

The soils report shall be prepared by a registered civil or geotechnical engineer.

Waste Management Program

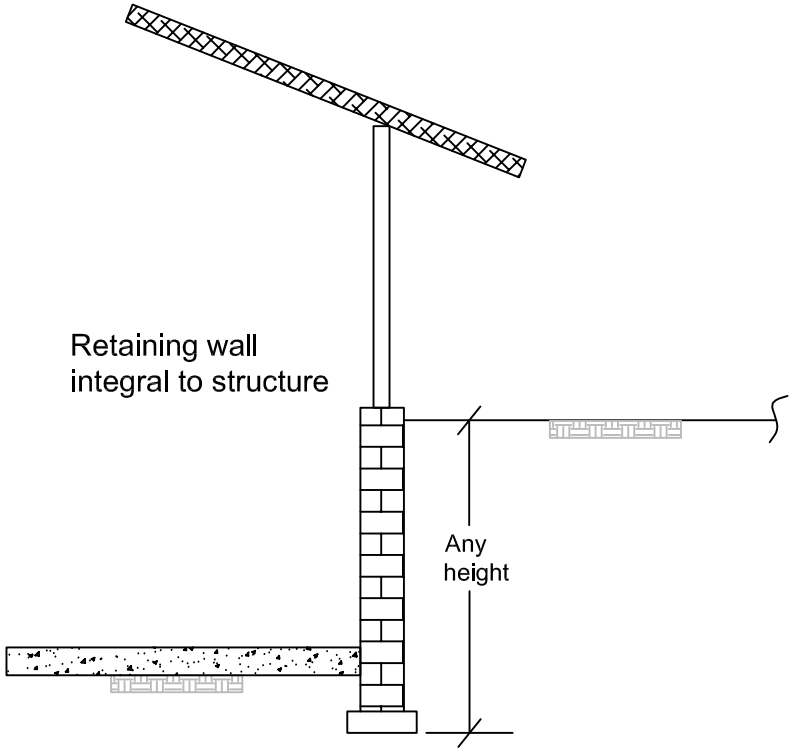
A Construction and Demolition Debris Recycling Plan may be required. Please see the City of Walnut Creek website for applicable projects and additional information: https://www.walnut-creek.org/home/showpublisheddocument/2772/637835620908530000

If applicable, a completed Waste Management Plan must be submitted and approved by the City before permit issuance. A final waste management report is required prior to final of a permit.

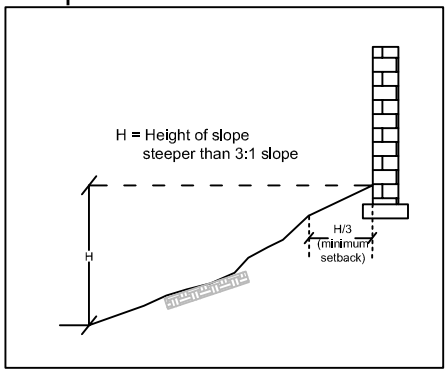
FIGURE 1

Examples of Retaining Walls Requiring a Building Permit

Case 1A



*Depiction of Minimum Setback



Case 1B

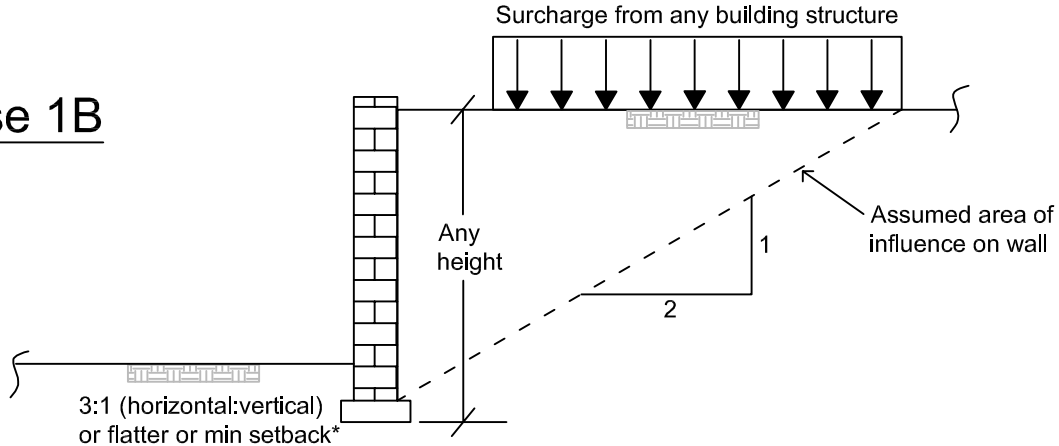
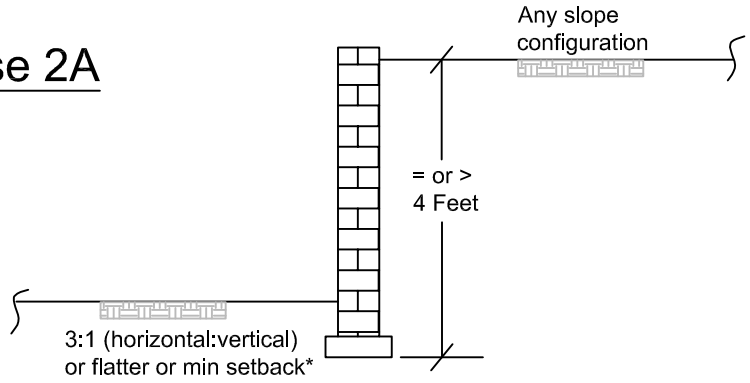


FIGURE 2

Examples of Retaining Walls Requiring a Site Development Permit

Case 2A



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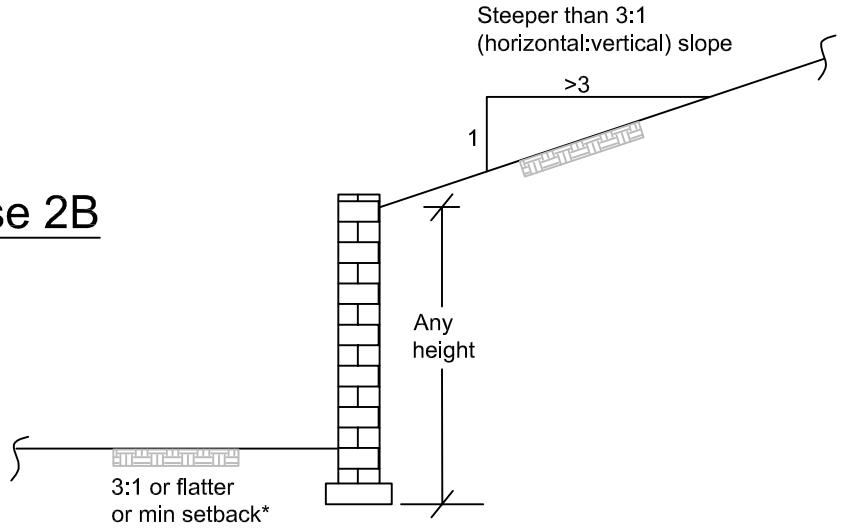
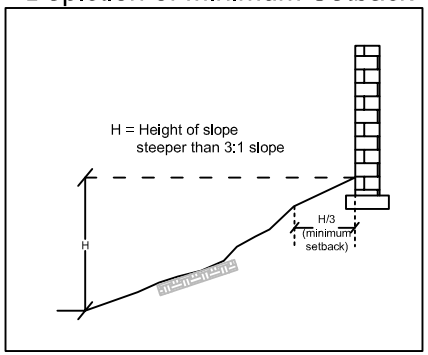


*Depiction of Minimum Setback



Case 2C

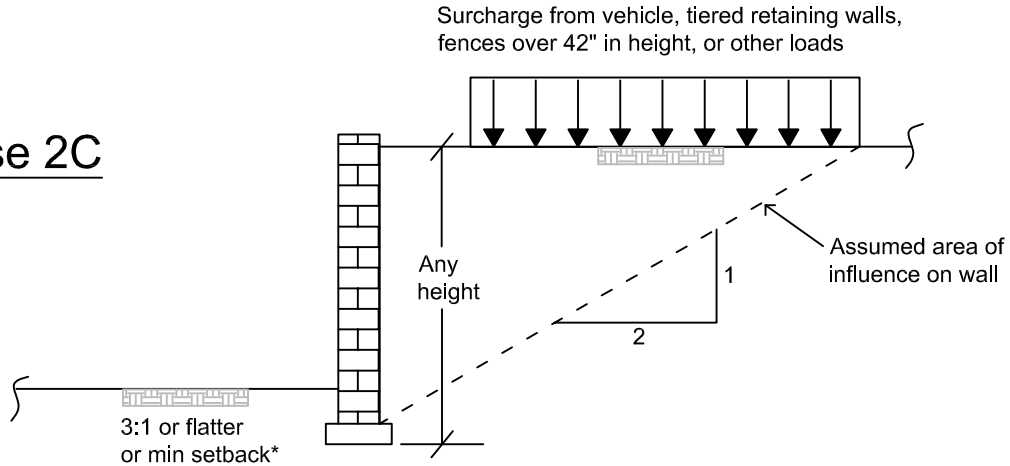
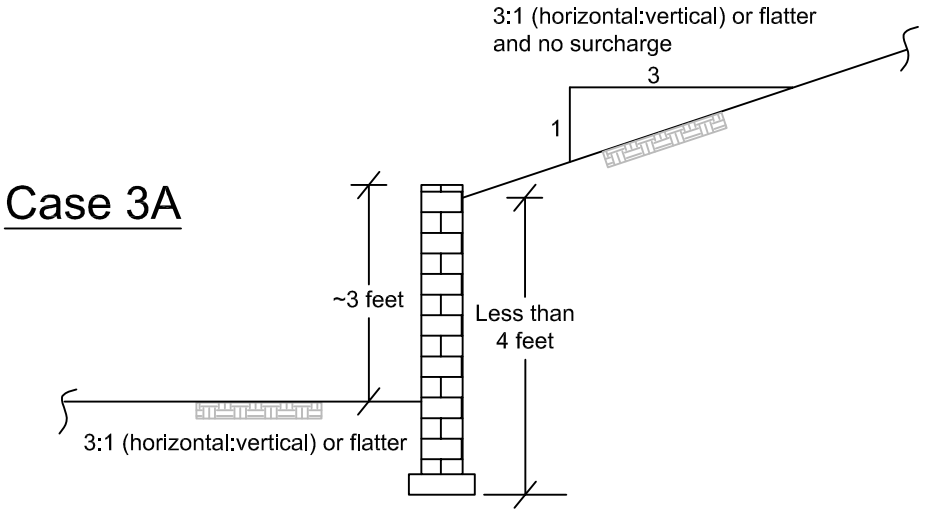
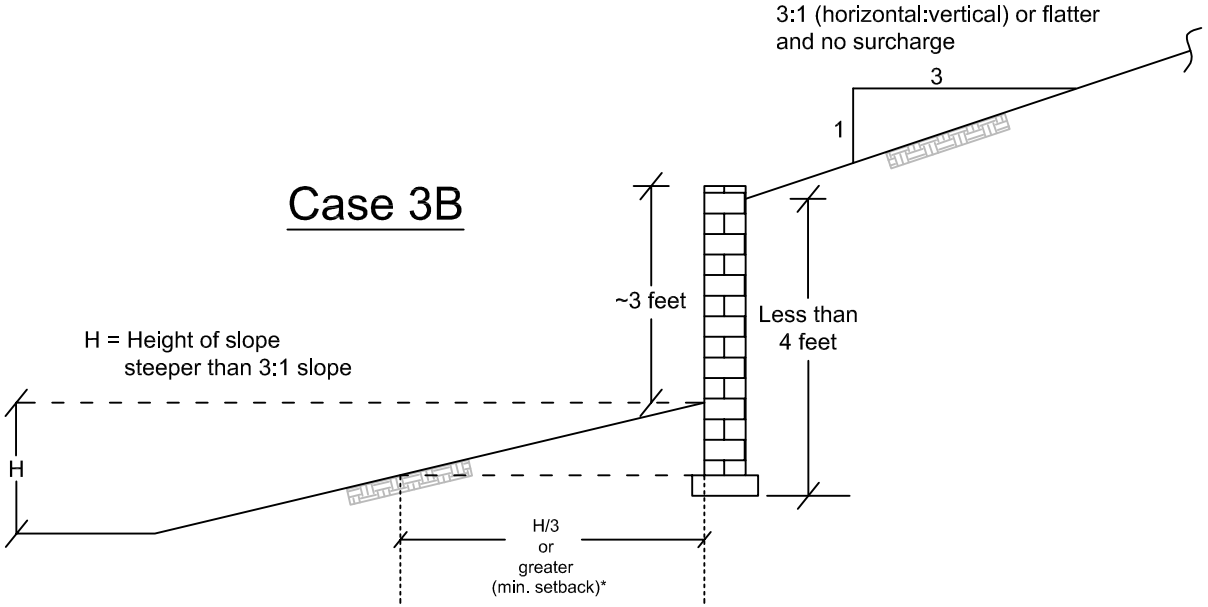


FIGURE 3

Examples of Retaining Walls **NOT** Requiring a Building or Site Development Permit





*Depiction of Minimum Setback