



COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT

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EVALUATING MODIFICATION OF MAJOR STRUCTURAL COMPONENTS OF NONCONFORMING STRUCTURES

(effective 4/20/12 outside Coastal Zone; effective 10/10/12 inside Coastal Zone)

Introduction

The Board of Supervisors has adopted regulations that require calculating how much a proposed remodeling project will change an existing structure, based on the percentage of the structure that is modified. The Board has also approved guidelines for the calculations to establish how each of four “major structural components” is weighted according to its relative significance in a typical residential or commercial structure. When project modifications reach a certain threshold, additional planning review may be required.

The weighted value for each of the four major components is as follows:

	15% - Roof framing
	65% - Exterior wall framing
	10% - Floor framing
	10% - Foundation

A “Level IV” (administrative staff approval) site development permit is required to modify 65% or more of the major structural components in a nonconforming structure over any five-year period. For nonconforming structures over a property line, within a riparian corridor, within five (5) feet of a vehicular right-of-way or within five (5) feet of a planned, public, vehicular right-of-way improvement, the threshold for a discretionary permit is 50%. In addition, modification of 65% establishes that one of the definitions of development in the Geologic Hazards Ordinance (Section

Definitions

Reconstruction: “Modification or replacement of 65% or more of the major structural components of an existing structure within any consecutive five-year period.” For projects over a property line, less than five feet from a right-of-way or within a riparian corridor, the threshold for discretionary review is 50% modification.

Major Structural Components: “The foundation, floor framing, exterior wall framing and roof framing of a structure. Exterior siding, doors, window glazing, roofing materials, decks, chimneys and interior elements including but not limited to interior walls and sheetrock, insulation, fixtures, and mechanical, electrical and plumbing elements are not considered major structural components.”

16.10.040(S)) is met, which means that the project may be subject to geologic review. A complete summary of the changes in regulations for nonconforming structures and uses is available on the county website (www.sccoplanning.com), along with the new County Ordinance #5119, effective outside the Coastal Zone as of April 20, 2012 and inside the Coastal Zone as of Oct. 10, 2012.

Any proposed increase in the height or length of a structure's nonconforming walls still requires a variance application. Any proposed addition must meet site and structural standards unless a variance is approved.

To help evaluate modification of major structural components, the county has developed a downloadable Modification Worksheet in two versions of Excel (2007 and 1997-2003). The Modification Worksheet automatically adds up the lengths or areas of all the modified segments entered into it, rounds the figures appropriately, calculates the percentage of modification and applies the weighting factors. Completed and printed out, the Worksheet provides applicants and county staff with a clear summary of modifications to existing structures. The Modification Worksheet is available on the Planning Department website, from the document titled "Evaluating Modification of Major Structural Components."

To facilitate county review of proposed structural modifications, all applications for building and discretionary permits involving nonconforming structures will be required to include a completed Modification Worksheet. When proposed modifications exceed 55% (or 40% in the special circumstances listed above) over a 5-year period, a Modification Plan will also be required. The Modification Plan, presented on a separate sheet, highlights modification areas and shows dimensions of modified walls, floors, roofs and foundations (see "Modification Plan Requirements," attached).

How to Measure Modifications

Note: This method of evaluating modification of major structural components is for zoning and geologic purposes only, and does not replace or invalidate definitions or procedures of the Building Code, soils report guidelines or any other County or California code outside of County Chapters 13 and 16. Any required clarification of measurements will be provided by Planning Director or designee. To be deemed "existing," a structure must have been established legally.

Walls

To avoid board-by-board field inspections and to simplify plan review and inspection, the planning department will require modified wall lengths to be measured in increments of four feet.

Method: Divide length of modified walls by total exterior wall length.

1. Measure the length of the existing walls. The total length is the exact lineal length of the first story exterior walls plus the lineal length of existing second and third story exterior walls, whether modified or not. Attic walls are included only if the "attic" is a story, pursuant to 13.10.700-S and Policy Interpretation ATTIC-01.

2. Measure modified length on each story. All modified wall areas are measured as multiples of

four feet (see attached diagram, “How To Evaluate Modification of Walls”). There is no minimum separation between modified areas. A four foot length less than four feet from a corner wraps around the corner. Additions do not count, but demolition or modification of an existing wall to enable an addition does count.

3. Divide the total modified length (a multiple of four feet) by the total existing exterior wall length. Multiply by 100 to get the percentage of modified wall.

Floors

Method: Divide modified floor area by existing floor area.

1. Measure the total area of the existing floor structures of every story, including joists and slabs, whether habitable or not. Deck floors do not count. Additions do not count, but demolition or modification of an existing floor to allow an addition counts. Do not use FAR (Floor-Area Ratio) guidelines.

2. Measure the areas of modified floor structure or slab. The modified area of each structural member extends halfway to each adjacent member (see diagram, “How to Evaluate Modification of Roofs (Floors Similar)”). For crosspieces and diagonal members, the modified area extends 16 inches on either side. Except for diagonal members, dimensions are usually measured parallel or perpendicular to joists, including locations where the dwelling wall is curved or diagonal.

3. Divide the modified floor area by the total existing floor structure area. Multiply by 100 to get the percentage of modified floor.

Roofs

Method: Divide modified roof area by existing roof area, excluding eaves and roofs over decks.

1. Measure the total area of the roof in two-dimensional plan view, neglecting slope (see diagram, “How to Evaluate Modification of Roofs”). Sealed decks that act as roofs are included in the roof area, not in the floor area. If a sealed deck serves as a roof only to another deck, it does not count as either roof area or floor area. Do not include in this measurement:

- Eaves.
- Deck or porch roofs, unless the deck or porch is fully enclosed.
- Additions. (Note: demolition or modification of an existing roof area to allow an addition counts.)

Tip: On one-story homes, the roof area is often the same as the floor area.

2. Measure modified roof areas. The modified area of each structural member extends halfway to each adjacent member. Where roof beams, ridges or valleys are replaced or modified, the member is considered to affect an area of roof extending 16 inches perpendicular distance on either side of it, measured from the center of the member.

3. Divide the modified roof area by the total existing roof structure area. Multiply by 100 to get the percentage of modified roof.

Foundations

Method: Modification of perimeter and pier and grade beam foundations are measured as a percentage of length; modification of a slab is measured as a percentage of area. Foundations for additions are not considered, but modification of an existing foundation to enable an addition is considered, such as new or modified footings to support a second floor.

Conventional perimeter foundation

1. Measure the total length of the existing perimeter foundation.
2. Measure the total length of the modified foundation (see diagram, “How to Evaluate Modification of Perimeter and Slab Foundations”). Where portions of the existing foundation are being underpinned, the modified length is determined by the number of piers (anchors, etc) times the average pier (anchor, etc.) spacing (see diagram, “How to Evaluate Modification of Pier and Grade Beam Foundations”). In locations where only one pier is being added at the perimeter, it shall count as a modification of four feet.
3. Divide the total length of the modified foundation by the total length of the existing perimeter foundation. Multiply by 100 to get the percentage of modified foundation.

Slab foundation

1. Measure the total area of the slab, whether modified or not.
2. Measure the total area modified. Where a slab is both floor structure and foundation, it will count in each category.
3. Divide the total length of the modified area by the total length of the slab area. Multiply by 100 to get the percentage of modified wall.

Pier and grade beam foundation

1. Measure the total length of the existing grade beam foundation (perimeter and interior).
2. Measure the length affected by modifications. Where piers are added or reinforced, multiply the number of modified piers by the average spacing (see diagram). In locations where only one pier (anchor, etc.) is being added, it shall count as a modification of four feet.
3. Divide the total length of the modified foundation by the total length of the existing pier and grade beam foundation. Multiply by 100 to get the percentage of modified foundation.

Other Situations

For complex foundation systems, where the above methodology does not provide an adequate approximation of modifications to a foundation, cases where new foundations are added within the footprint of the structure, cases where the loading is removed or otherwise transferred off of existing foundations, or when the above methodology does not apply, the county reserves the right to evaluate -- or to request a structural engineer to provide -- a percentage of the overall tributary area of the structure that is being affected by the foundation modifications.

What is Considered Modification of Major Structural Components

- Walls: In exterior walls of each story: the removal, replacement, reinforcement or addition of members including, but not limited to, studs, girders, headers, king studs or top plates, and also including:
 - ✓ Wall furring or sistering.
 - ✓ Balloon framing incorporated into to an existing wall – to raise a top plate or lower a foundation, for example.
 - ✓ Any length of wall that is relocated.
 - ✓ Addition of horizontal framing attached to a top plate to reinforce the story below, where no additional story or wall area is added over the reinforced top plate.

- ✓ Interior walls that function as exterior walls. An interior wall functions as an exterior wall if it establishes the inner barrier next to an actual exterior wall, thereby defining the usable area. Some dwellings are remodeled with “exoskeletons,” where an interior wall is built, often with an associated foundation, just inside the existing exterior wall. In such cases, both the existing exterior wall and the adjacent interior wall will be considered part of one exterior wall, measured as one length of wall perimeter.
- Roofs: Removal, replacement, reinforcement or other modification of rafters, roof girders, rafter ledgers, beams, sealed deck floors serving as roofs to rooms below, attic roofs, cupola roof structures and similar roof areas.
- Floors: Removal, replacement or reinforcement or other modification of floor joists, slabs or related floor structures. Where a slab serves as both floor and foundation, it will count in both categories.
- Foundations: Removal, replacement, reinforcement or other modification of foundation perimeters, pier and grade beam foundations, slab foundations and other structural foundation elements on a case-by-case as determined by the Planning Director.

What is NOT Modification of Major Structural Components

Removal, replacement or other modification of:

- Sill plates and trimmers (unless associated with relocating a wall); window sills.
- Cripple walls, including cripple wall members in existing understories, cripple walls beneath existing window sills or headers, and cripple walls placed over a top plate to raise the height of all or part of the roof. Note: although existing nonconforming walls may now be rebuilt, no new walls may be allowed within a front, rear or side yard setback without a variance, nor may the height or length of an existing nonconforming wall in a front, rear or side yard setback be *increased* without a variance.
- Replacement of window glazing, skylights, doors or like structures without altering the framing.
- Under an existing, unmodified header, the “filling in” of existing windows, doors (including garage doors), skylights and like openings.
- Eaves. Where eaves are sistered or replaced, only the sistered or replaced areas inside the top plate, measured from the outside wall, count as roof modifications.
- Deck walls, rails, floor structures or roofs, unless deck is part of main roof or fully enclosed. (Fully enclosed decks, porches or sunrooms are considered unheated rooms, to which modifications are counted.)
- Interior walls.
- Walls or floors of attics, understories or basements.
- Ceiling joists that are not roof rafters.
- Removal or addition of sheetrock, wall finishes or siding.
- Floor underlayment, subfloor or finish flooring.
- Horizontal framing attached to a top plate for the addition of a new story or cripple wall. (Other modifications to support a new story, such as addition of studs or foundation upgrades, count.)
- Hold-downs or tie-downs for existing posts for seismic purposes.

- Structural sheathing for seismic purposes (other seismic framing/bracing, such as the addition of studs, counts).
- Channel framing / sheetrock backing for interior walls, including where attached to exterior walls.
- Modification of eaves, fascia, collar ties, crickets or similar roof features.
- Boring and notching meeting standard code requirements for electrical, plumbing and mechanical components.
- Additions are not counted, but most modifications to an existing structure to enable an addition are counted. See exception for horizontal framing for top plate (above).

How to Apply the Weighting Factors

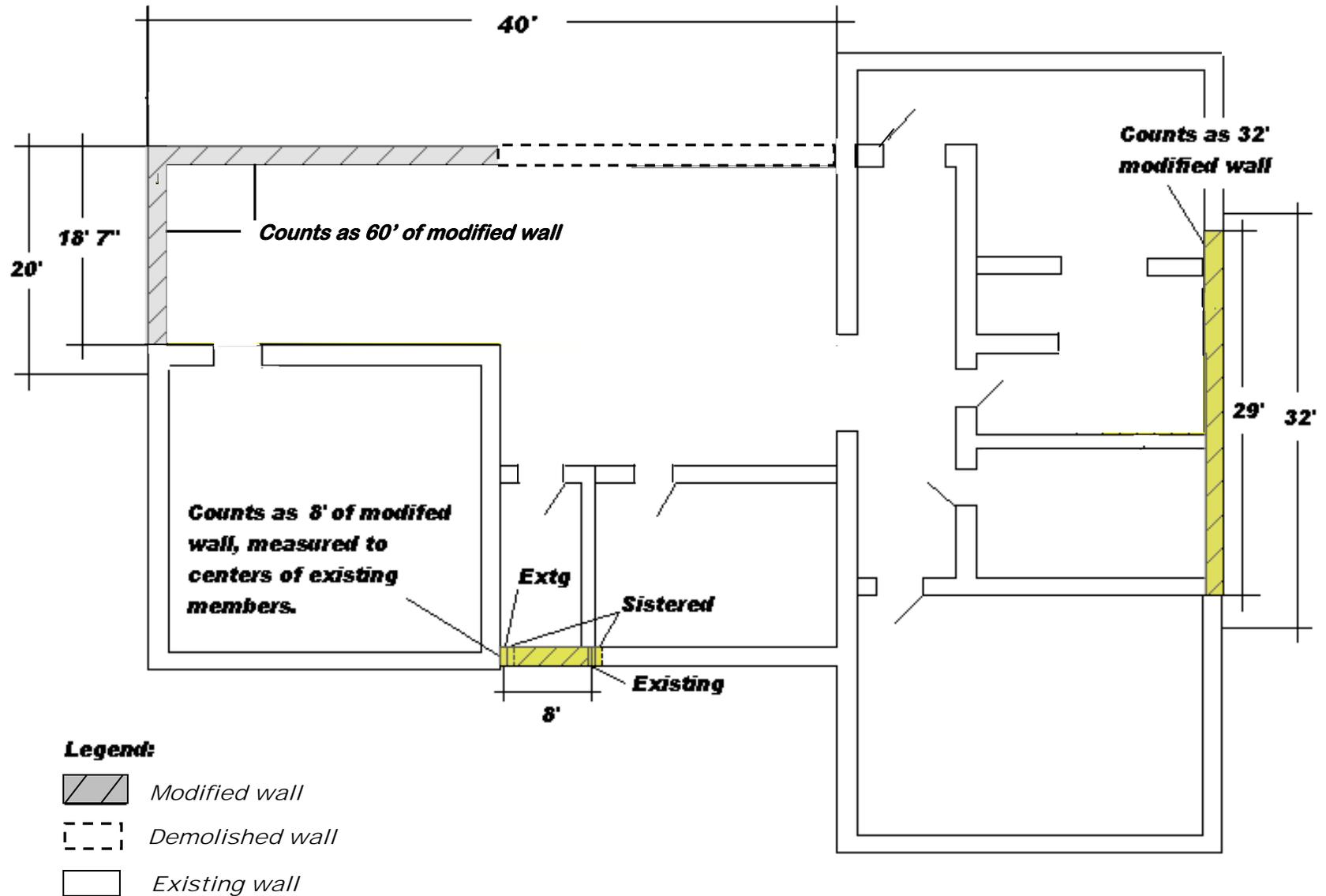
As established by the Administrative Guidelines, modifications to each of the four major structural components will be weighted. When the Modification Worksheet referenced above is used to calculate modification, the weighting factors are calculated automatically. The following table, which is not a calculator but provided for demonstration purposes only, shows how the weighting factors are applied to a sample structure where the floor and foundation are replaced and the walls and roof are modified by 50%. To obtain the weighted totals, the percentage of modification to each structural component is multiplied by the weighting factor. The net modification of each of the four components, rounded to the nearest whole number, is added up to obtain the total modification.

Example

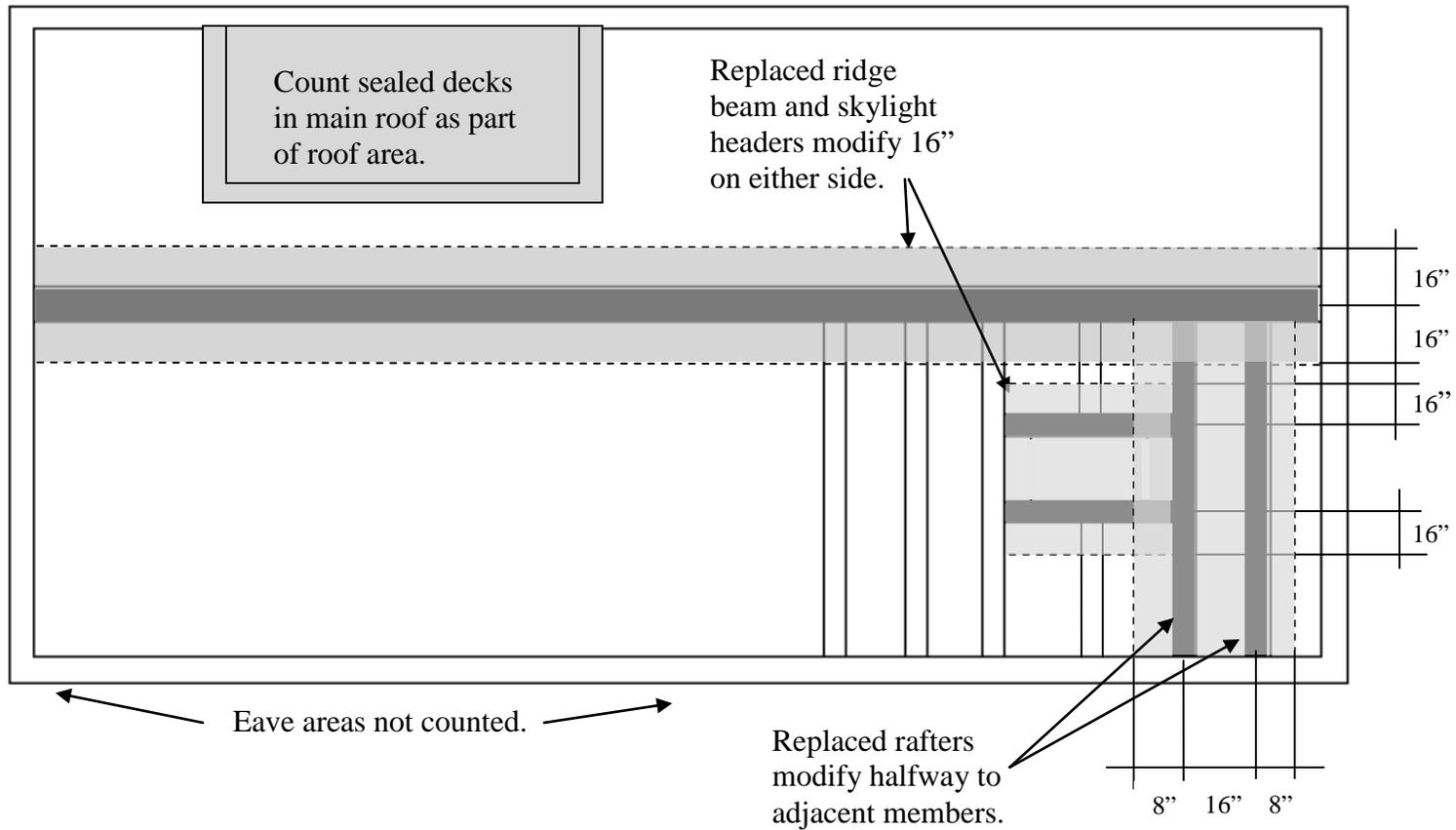
Major Structural Component	Percentage Modification (Enter here)	Weighting Factor	Total Modification (Percentage modification times weighting factor)
Roof	50%	15%	8%
Walls	50%	65%	33%
Floor Structure	100%	10%	10%
Foundation	100%	10%	10%
TOTAL MODIFICATION			60%

In the above case, the total modification is 60%. If the project involved a nonconforming structure, the extent of modification would not require a “Level IV” permit unless also located over a property line, within a riparian corridor, within five (5) feet of a vehicular right-of-way or within five (5) feet of a planned vehicular right-of-way improvement. The 60% modification would not qualify the project for geologic review unless it met one of the other definitions in the Geologic Hazards section, 16.10.040(S).

How to Evaluate Modification of Walls

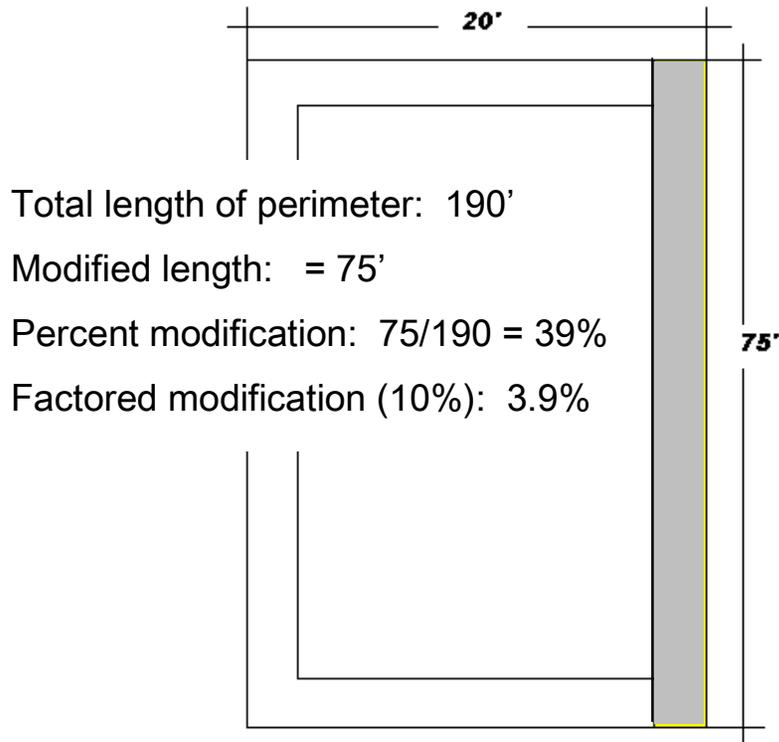


How to Evaluate Modification of Roof Areas (Floor Areas Similar)

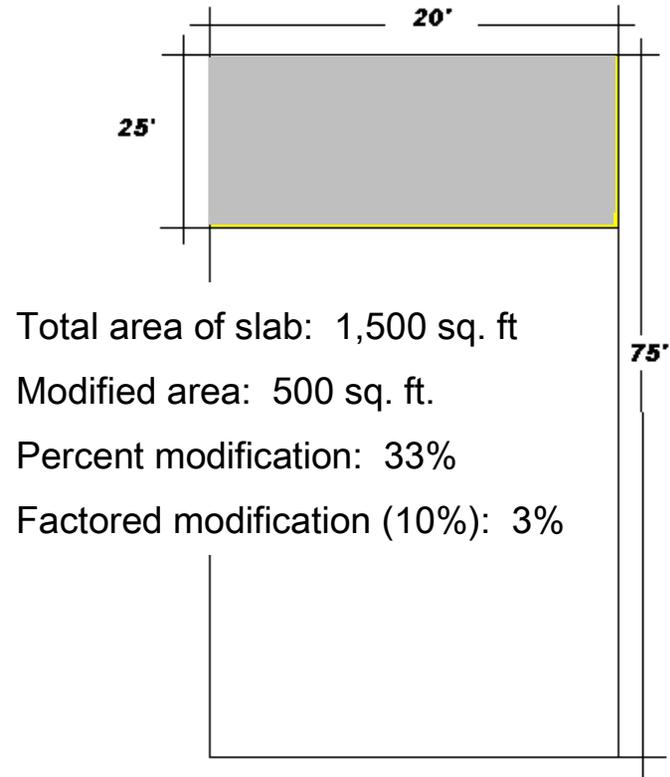


How to Evaluate Modification of Perimeter and Slab Foundations

Perimeter Foundation



Slab Foundation



-  Unmodified
-  Modified

MODIFICATION PLAN REQUIREMENTS

A Modification Plan is required for permit applications involving projects where the proposed, total modification of the major structural components of a nonconforming structure or use is within ten percentage points of the 65% / 50% threshold for a discretionary permit. For most projects, a Modification Plan is thus required if modification reaches 55% or more. If the affected structure is across a property line, within a riparian corridor, within five (5) feet of a vehicular right-of-way or within five (5) feet of a planned, public, vehicular right-of-way improvement, a Modification Plan is required for projects modifying 40% of the major structural components. The County may also require a Modification Plan if the submitted plans do not clearly indicate the extent of structural modification. If the project involves a site with potential geological concerns, a Modification Plan may be required for a determination whether a structure is considered development per the Geologic Hazards Ordinance and thus may be required to prepare a Geologic Report or Geologic Hazards Assessment.

- Scale 1/4" = 1 foot.
- Modification Plan is a separate sheet in plan set and does not include structural details.
- Provide floor plan showing and stating the dimensions of only existing, demolished and modified walls, floors, roofs. All modified walls measured in multiples of four feet. An existing wall is considered modified as long as the replaced members do not extend the entire length of the wall.
- Do not show new walls, floors, roofs or foundations. An existing wall is considered a “new” if the reconstruction extends from corner to corner – i.e., the wall is entirely replaced.
- Do not show decks unless fully enclosed or part of main roof structure.
- Do not show basement walls or floors.
- Do not include attic walls or floors unless the “attic” is actually a story pursuant to 13.10.700-S and Policy Interpretation ATTIC-01.
- Provide one number stating total length of existing exterior walls, including all stories, but not including deck walls (unless enclosed), basement walls or attic walls. Thus, if the first floor exterior wall perimeter is 1,000’ and the second floor exterior wall perimeter is 700’, the total wall length is 1,700’.
- State total area of existing floor structure. Do not include deck floors or porches unless fully enclosed. Do not include attics (unless a story), basements or additions. Do not use FAR (Floor-Area Ratio) guidelines.
- State total area of existing roof. Include sealed decks that act part of primary roof, but do not include eaves or deck roofs (unless deck enclosed). Do not include additions.
- Perimeter foundations: show and state the length of existing, demolished and modified foundation areas only (no new foundations), and state total length of exterior perimeter foundation.
- Slab foundations: show and state the dimensions and area of existing, demolished and modified slab areas only, not including existing decks, porches or new slabs, and state total area of existing slab.
- Pier and grade beam foundations: show – and state the length of -- existing, demolished and modified foundation areas only (no new foundations) and new piers or other reinforcements, and state total length of existing grade beam foundation, including grade beams under interior areas of structure. Note: where a pier and grade beam or perimeter foundation is reinforced with piers, anchors, etc., the modified foundation length is equal to the average spacing between modified piers multiplied by the number of piers. In locations where only one pier (anchor, etc.) is being added, it shall count as a modification of four feet.
- Combined foundations: also show dimensions of and state the TOTAL floor area supported by each type of foundation. For example, if a the perimeter foundation of a dwelling unit supports

1,000 square feet of floor area, and the garage slab supports 800 square feet of floor area, enter those two figures into the Modification Spreadsheet. Do NOT attempt to calculate the areas supported only by modified foundation segments unless the County requests this information.

s/permit centers/revised handouts/NCF-eval modif of structs 10-30-12 Last updated 10-30-12