

HEIGHT REQUIREMENTS & CALCULATING HEIGHT

This information is provided to assist developers in understanding and complying with height requirements for development in the City of Hermosa Beach. It is not a substitute for the specific requirements in the *City of Hermosa Beach Municipal Code*.

The following sections of the Municipal Code supply information on height:

- Maximum building height: Consult the zoning district for the property
- Exceptions to height: Chapter 17.46
- Other regulations may apply to specific uses or situations.

Maximum Building Height by zone:

Residential Zones

R-1	25 feet
R-1A	25 feet
R-2	30 feet
R-2B	30 feet
R-3	30 feet
R-P	30 feet

Commercial and Manufacturing Zones

C-1	30 feet
C-2	30 feet
C-3	35 feet
SPA 7	35 feet
SPA 8	35 feet
M-1	35 feet

Definition of "building height": A vertical distance measured from grade, as determined as described herein, to the corresponding uppermost point of the roof. (*Hermosa Beach Municipal Code, Section 17.04.040*)

Definition of grade: "Grade" at any point on a lot is determined based on existing corner point elevations, taking into consideration significant variations relative to adjacent properties.

In cases where there is significant variation in elevations between adjacent properties at corner points, the point of measurement shall be established based on the elevation at the nearest public improvement or an alternative point within 3 horizontal feet which, based on supporting evidence, represents existing unaltered grade. In the absence of supporting documentation the corner point elevation shall be established at 1/2 the difference between the adjacent elevation and the elevation on the property in question.

The determination of grade shall be made by the Community Development Director, based on all available evidence, and any disputes shall be referred to the Planning Commission. For lots with convex contours (where the ground level arches upward along a property line) the "grade" of a lot may be based on a detailed topographical survey along the property line with spot elevations called out at a minimum of two (2) foot intervals."

Procedure for calculating, measuring, and enforcing building height requirements:
(*Hermosa Beach Municipal Code, Section 17.46.015*)

In general, maximum height runs parallel to the slope of the ground. Where any question about height exists, a height survey performed by a licensed surveyor or civil engineer will be required. Height survey requirements require:

1. A detailed topographic survey, prepared and certified by a licensed surveyor or civil engineer, indicating all property corner point elevations are used as the basis for calculating building height. The topographic survey indicates all existing improvements, adjacent sidewalk, curb, street improvement and adjacent property elevations.
2. The maximum allowable building height at the highest elements of the roof (the Critical Point, CP) is calculated by interpolating from the elevation points shown on the survey. Critical Points and allowable building height at each critical point is clearly stated on the roof plan.
3. The building, while under construction and at the roof framing inspection stage, shall be surveyed to determine building heights at critical points on the roof (or uppermost portion of the building roof sheathing) corresponding to approved plans. The survey shall be conducted and certified by a licensed surveyor or civil engineer.
4. A building height verification letter shall be submitted indicating that the building is at or below the calculated maximum building height at the critical points before the roof framing final inspection is approved by the City.

Is there another way to visualize or understand maximum building height?

Maximum building height can be visualized as an imaginary plane that is parallel to a uniformly sloping plane that connects the corner points of a lot.

It must be understood that the elevation at the corner points is how grade is determined--not the grade at the street or the grade where the building is located. However, where the corner significantly varies from adjacent grades, a judgment is necessary to find whether the corner point elevation or an adjacent elevation best represent "unaltered" grade.

In other cases where the lot contains a convex slope (an upward bulge or arch), grade can be based on the upward curve along the property lines, assuming it is a natural condition, and not created with fill. A convex slope determination requires Planning Commission review and approval.

Are there any exceptions to the maximum height limit?

In residential zones chimneys, vents and flues are the only exceptions, and may exceed the height limit only to the extent necessary to comply with the clearance requirements of the Uniform Building Code. Solar energy systems may exceed height. (*Hermosa Beach Municipal Code Chapter 17.46*)

In commercial and manufacturing zones chimneys, vents and flues are also excepted, and other exceptions are available for elevator housings, stairs, tanks, parapet fire walls, fans, smokestacks, wireless masts, and similar structures. Solar energy systems may exceed height. (*Hermosa Beach Municipal Code Chapter 17.46*)

How is compliance with maximum building height verified?

After roof framing, the builder must obtain an official survey (from the same licensed surveyor or civil engineer who prepared the survey) of the finished roof heights at the critical points. These points must be

at or below the calculated maximums for the subject critical points before the City will allow the builder to proceed with installation of roof coverings or deck coverings.

It is strongly advised that when constructing multi-story structures that surveys be obtained at various phases of construction to verify that finished floor levels are consistent with project plans.

Things to Know:

- Alterations and expansions to existing one-story buildings not resulting in additional stories and minor alterations to any building which are clearly below maximum height limits may not need to submit a height survey.
- No structure exceeding the height limit shall result in additional floor area.
- Decks, projections, and roof elements must conform to the height limits, unless exempted by the code. Deck railings, a minimum of 42 inches in height, cannot exceed the height limit.
- Residential heights: R-1, R-1A: 25 feet; all other residential zones: 30 feet.¹ Chimneys, vents and flues may exceed the height limit only to the extent required to meet the uniform building code requirements. (Section 17.46.010)
- Commercial and manufacturing uses: Refer to the code for exemptions to height. (Section 17.46.010)
- Antennas, satellite dishes, and similar structures, solar energy systems, and single-pole umbrellas on roof decks have special requirements. (Section 17.46)
- In cases where the lot has a convex slope, steep drop off, or other physical anomaly, the developer may seek a determination for the Planning Commission regarding variations to the height calculation; an application and nonrefundable fee is required.

Detailed Instructions on Measuring Height

There are four necessary steps in making the building height measurement discussed in detail below:

1. Prepare a detailed topographic survey with precise elevations at property corners
2. Determine the corner point elevations which will be the basis of the height calculation.
3. Find the location(s) on the roof or other highest points of the building which will be the "Critical Points"
4. Calculate the maximum building height at the Critical Points of the building.

1. Topographic Survey

A detailed topographic survey provides the necessary information to begin to determine the basis for the building height measurement. The survey must be prepared by licensed surveyor or civil engineer. In addition to typical information provided on a survey, the survey must include elevations at property corner points, and nearby spot elevations whether at adjacent public improvements or adjacent property. Additional spot elevations should be provided along and near property lines, and in the case of a convex lot, spot elevations are needed at two foot intervals (or alternatively, contour lines can be provided for each 1/10th of a foot. For additions/remodels all the above information needs to be provided plus existing finished floor elevations and roof ridge elevations of the building.

¹ The Planning Commission may allow up to 35 feet on R-P lots when heights on abutting lots are greater than feet.

2. Determine Corner Points (or other Points) to be Basis of the Height Measurement

In most case the basis for the measurement is the elevations found at the property corners as they best represent unaltered grade. However, in some situations with “significant variation between adjacent properties” (for example where the property corner fall at the top or bottom of a retaining wall) it may be necessary to use another elevation point based on other information on the survey. Early consultation with the Planning Division is recommended.

Where a convex sloping condition clearly exists on a lot, determining the basis of the height measurement is more complex, and may result in the use of multiple points along a property line or on the lot. In these situations the Planning Division staff should be consulted and the grade determination will have to be referred to the Planning Commission.

3. Find the Critical Point(s) on Roof of Building.

The location of the critical point or points is a function of the building and roof design (including roof decks and railings). The Critical Point on the roof can be described as the high point or points on the roof (or deck railing) that are closest to the lowest corner on the lot. In other words, the critical point is where the roof comes closest to piercing the imaginary plane which represents maximum building height.

Recommended techniques in determining the location of the critical point(s) are as follows:

Using the building elevation drawings, an imaginary line can be drawn which represents maximum building height. Using the building elevation which represents the lower side of the lot, it can be readily seen where the roof comes closest to this line. (See exhibit 1)

Overlay the roof plan on the site plan (with property lines and corner point information). Find the point or points on the roof (whether a ridge, corner of a parapet, corner of roof deck railing) which is closest to low corner. (See exhibit 2)

The critical points are then plotted on the roof plan, and the location relative to corner points and property lines can be readily determined.

4. Calculate Maximum Height at Critical Point(s)

The method used by the City is to find the grade at the critical points by interpolating between corner point elevations. “Interpolation” is defined as “estimating a value between two known values”. Assuming that a lot contains four corners, two interpolations are made along the side lot lines to the depth of the lot where the critical point is located. Then a third interpolation is made across the lot between the first two interpolated points to the exact location of the critical point. The height limit is added to the interpolated grade elevation, yielding the maximum height at the subject critical point. For more complex calculations (e.g. lots with more than four corners, or with multiple points along convex contours) additional interpolations are made.

The calculation can be done by hand (see exhibit 3) or with the use of a spread sheet which already contains the interpolation formulas (see exhibit 4). The spreadsheet requires 11 inputs: 10 numbers readily obtained from a roof plan/property line diagram, and the height limit for the appropriate zone. The spreadsheet is available in Microsoft Excel online, or a copy may be obtained from the Community Development Department by email. Contact Eva Choi at echoi@hermosabch.org.

Prior to zoning approval, and prior to structural plan check, the critical point maximum height limits must be clearly indicated on roof plans and elevations, along with proposed roof heights, which are at or below the maximum.

Exhibit 1

Determining Location of Critical Points (CP)

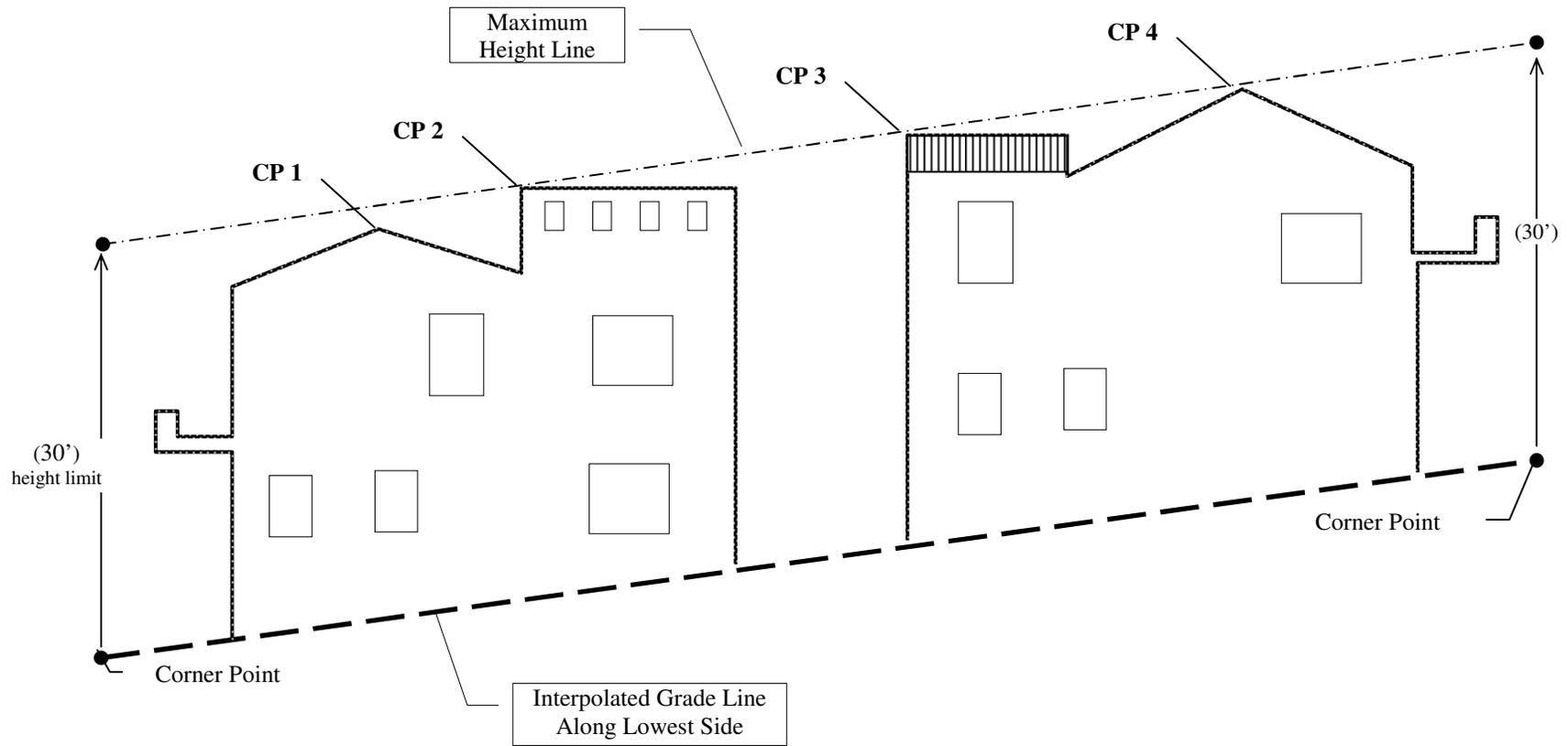
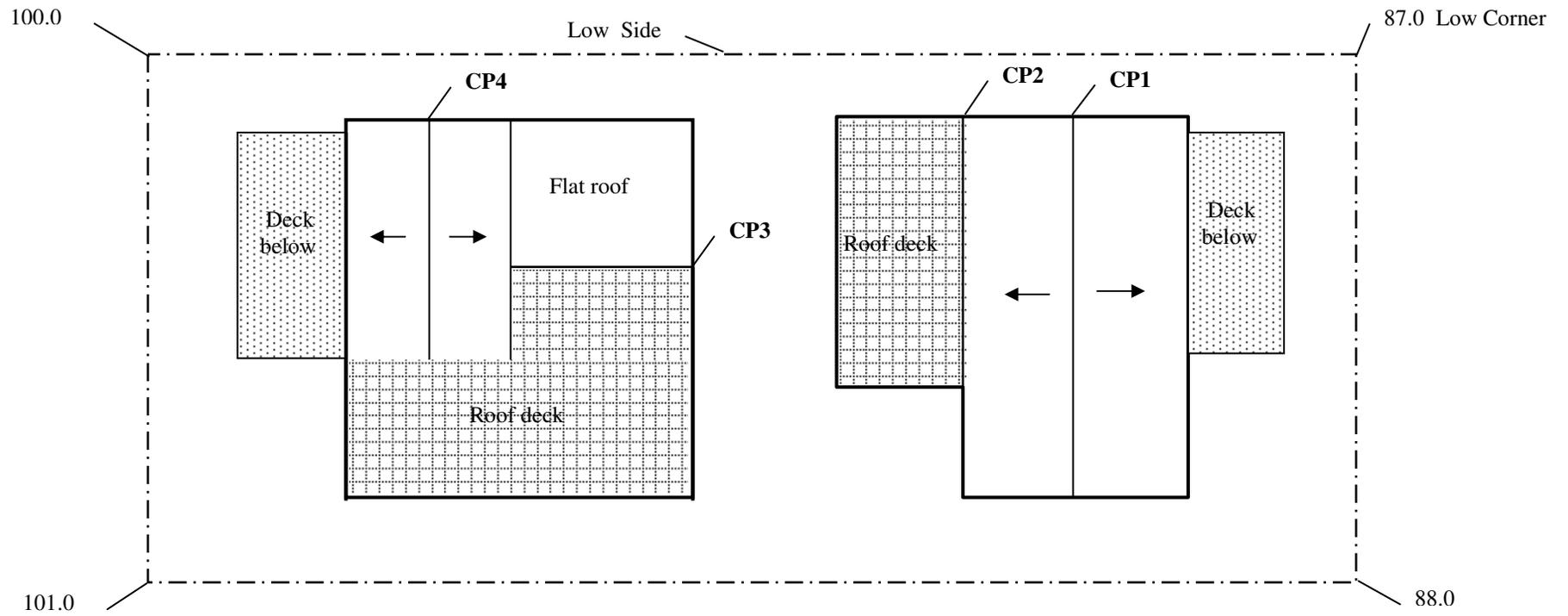


Exhibit 2
Determining Location of Critical Points (CP)
Roof Plan View

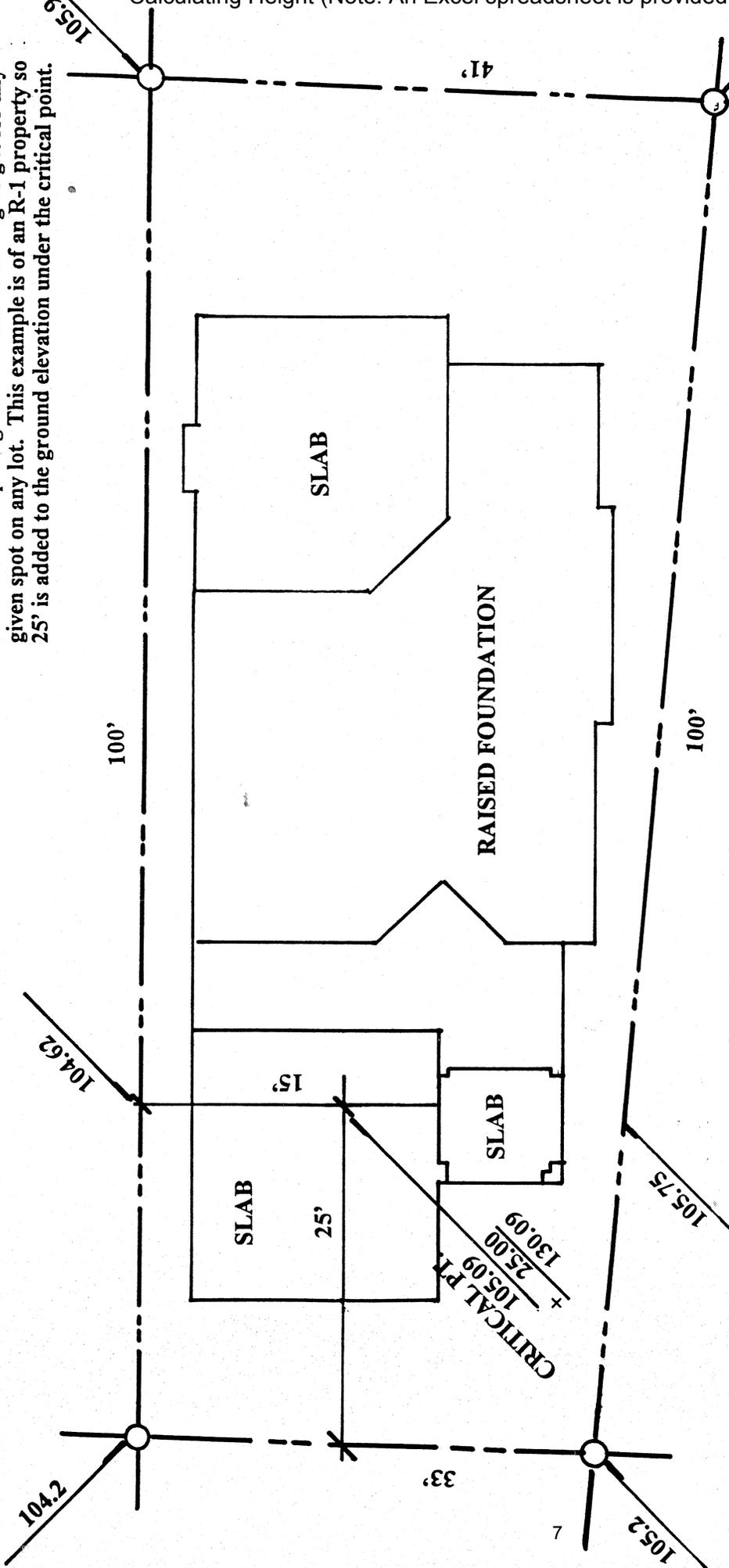


HEIGHT CALCULATION EXHIBIT

NOTE: The below survey and calculations demonstrates the method for computing the allowable building height for any given spot on any lot. This example is of an R-1 property so 25' is added to the ground elevation under the critical point.

Exhibit 3

Calculating Height (Note: An Excel spreadsheet is provided as a separate document)



NORTH SIDE	CROSS LOT	SOUTH SIDE	HIGH CORNER	SO. SIDE ELEV. AT CRITICAL POINT (C.P.)
105.9	105.75	107.4		
-104.2	-104.62	-105.2	LOW CORNER	NO. SIDE ELEV. AT C.P.
= 1.7+100	1.13+36	2.2+100	+ LOT DEPTH	DIFFERENCE + LOT WIDTH (AT THAT POINT)
= .017	= .031	= .022	= SLOPE PER FT.	SLOPE / FT.
x 25.00	x 15.00	x 25.00	x DISTANCE FROM LOW	DISTANCE NO. SIDE TO C.P.
.42	.47	.55	= RISE ALONG P.L.	TOTAL RISE TO C.P. (GROUND LEVEL)
+104.20	+104.62	+105.20	LOW CORNER	NO. SIDE ELEV. AT C.P.
104.62	+ 25.00	105.75	P.L. ELEV. AT C.P.	GROUND ELEV UNDER C.P.
	130.09			HEIGHT LIMIT (25', 30', OR 35' DEPENDING ON ZONE)
				MAX. ALLOWABLE AT C.P.

