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**THIRD AMENDMENT TO PROTECTIVE COVENANTS FOR CASTLE CREEK VALLEY RANCH P.U.D./SUBDIVISION PITKIN COUNTY, COLORADO**

WHEREAS, the Protective Covenants for Castle Creek Valley Ranch P.U.D./Subdivision, Pitkin County, Colorado (the "Protective Covenants"), were recorded April 26, 1993 in Book 709 at Page 812 in the office of the Clerk and Recorder of Pitkin County, Colorado, and were subsequently amended by the First Amendment to Protective Covenants for Castle Creek Valley Ranch P.U.D./Subdivision, recorded May 12, 1993, in Book 712 at Page 35, and the Second Amendment to Protective Covenants for Castle Creek Valley Ranch P.U.D./Subdivision, recorded June 3, 1993, in Book 714 at Page 95, in the office of the Clerk and Recorder of Pitkin County, Colorado; and

WHEREAS, Declarant wishes to amend those Protective Covenants.

NOW, THEREFORE, the Protective Covenants are modified as follows:

1. Article XI, GENERAL RESTRICTIONS.

Paragraph 6, Avalanche Constraints. A new Exhibit "E" shall be added, described as follows:

Exhibit "E" - "Lot 2, Description of Design Avalanche, Hazard Potential and Mitigation Concepts" (applies only to Lot 2).

IN WITNESS WHEREOF, this Third Amendment to Protective Covenants for Castle Creek Valley Ranch P.U.D./Subdivision, Pitkin County, Colorado, is executed this 30 day of June, 1993.

**CASTLE CREEK VALLEY RANCH PARTNERSHIP,**
**a Colorado general partnership, by:**
HOLSTEIN INVESTMENT CORPORATION, a Colorado corporation, a General Partner

By [signature]
Philip M. Holstein, Jr., President

STATE OF COLORADO )
) ss.
COUNTY OF PITKIN )

The foregoing instrument was acknowledged before me this 30 day of June, 1993, by Philip M. Holstein, Jr., as President of HOLSTEIN INVESTMENT CORPORATION, a Colorado corporation, as a General Partner of CASTLE CREEK VALLEY RANCH PARTNERSHIP, a Colorado general partnership, on behalf of said partnership.

WITNESS my hand and official seal.
My commission expires: 5/22/97

[signature: Mary L Carmichael]
Notary Public

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EXHIBIT E

# LOT 2: DESCRIPTION OF DESIGN AVALANCHE, HAZARD POTENTIAL AND MITIGATION CONCEPTS

## 1. DESIGN-AVALANCHE CHARACTERISTICS

The design avalanche that can reach a portion of Lot 2 occurs in a small, unnamed avalanche path outlined on the attached Figure 1. During extreme snowpack and weather conditions expected one time during a century (the "100-year avalanche"), or design avalanche, will release from the 9,000-foot elevation level approximately 600 feet above the possible building location. The avalanche will flow through the aspen forest and stop at approximately 8,410-to-8,380 feet elevation on relatively gentle slopes (Figure 1). Aspen trees may be broken and carried downslope. The downhill tip of this avalanche may reach the building envelop.

## 2. AVALANCHE FREQUENCY AND HAZARD POTENTIAL ON LOT 2

No historic or physical evidence of an avalanche of design magnitude could be found on site or through interpretation of aerial photographs. Damage to the forest indicates the largest avalanches have reached to approximately the 8,450-foot level, which apparently is 100-200 feet above the building sites. The aspen forest below 8,450 feet and above the building site consists of numerous trees with six to eight inch diameters (several decades old), indicating that an avalanche has not produced any substantial forest damage above the building site in at least several decades. However, analysis of topography and experience with avalanche paths of similar size in this climate indicates avalanches may be larger than any that could be documented.

The annual probability of avalanches at the site is roughly 1%, although this is only an "order of magnitude" estimate, or rough approximation of avalanche probability. Smaller avalanches will occur every few years on the steep slopes west of Lot 2, but most of these will stop above or within the aspen forest and not approach building sites.

## 3. AVALANCHE DESIGN PARAMETERS

Avalanche design parameters (flow thickness, impact pressure potential, and velocity) have been computed at the 8,420-foot elevation level (Figure 1). This assumed design point is near a wooden platform and is approximately 200 feet inside the eastern avalanche boundary. However, the flow thickness, pressure, and velocity will decrease quickly toward the eastern edge of the avalanche path. The design parameters have been provided in Figures 2, 3, and 4, however, they may not apply for an alternate building site.

## 4. MITIGATION CONCEPTS -- LOT 2

Buildings are often built in avalanche "Blue Zones" because reduced avalanche speed and energy in blue zones enable building reinforcement or other methods of protection to easily be incorporated into design and avalanche frequency is small. As illustrated in Figures 5 and 6, two forms of avalanche protection can be incorporated into a building at the 8,420-foot level: (a) a splitting wedge design, or (b) a flat wall surface at right angles (normal) to the avalanche flow direction.

#358378 06/30/93 15:39 Rec $35.00 BK 716 PG 471
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6-30-93

#358378 06/30/93 15:39 Rec $35.00 BK 716 PG 472
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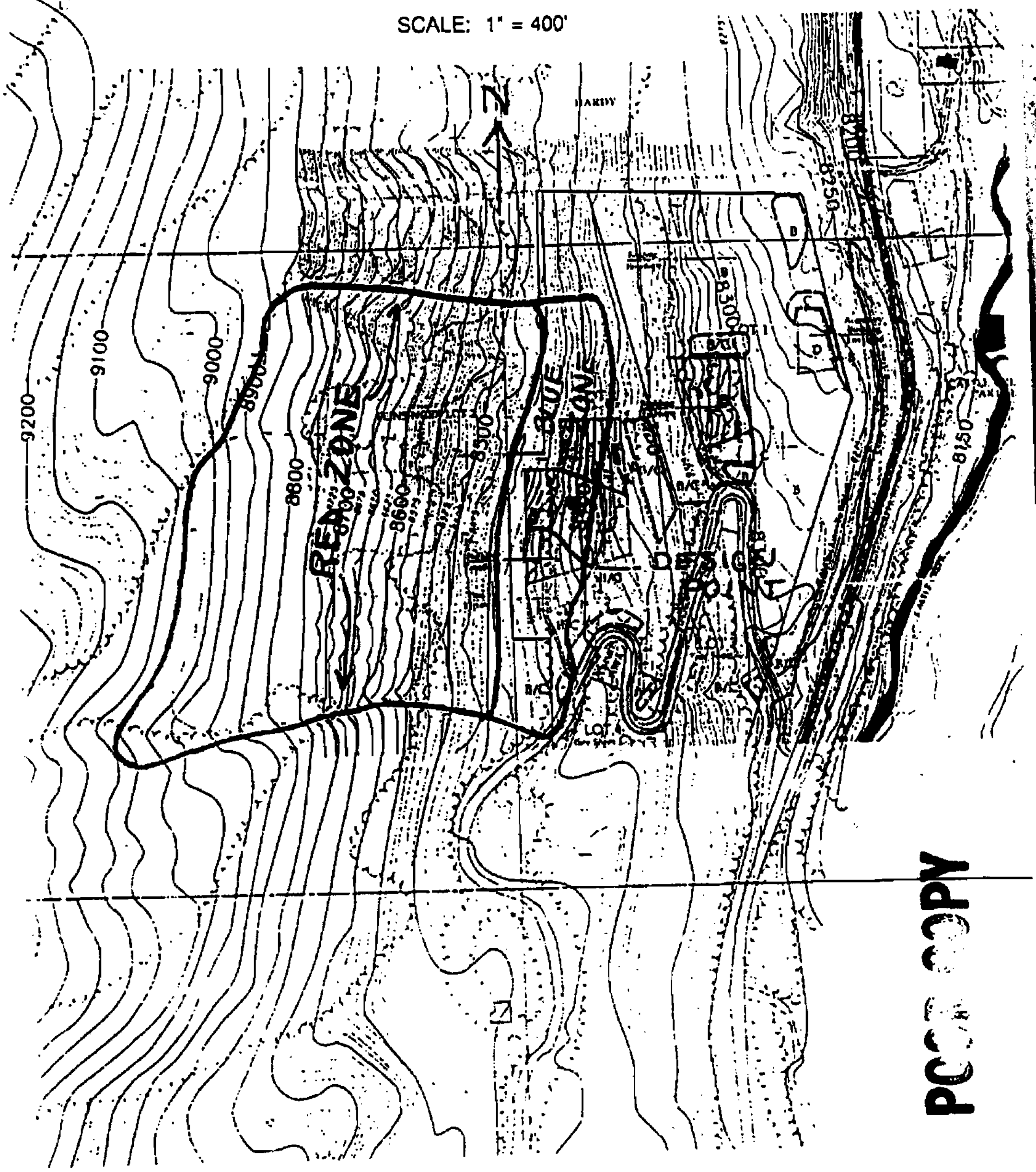
FIGURE 1. Location map showing maximum extent of design avalanche during 100-year conditions. The assumed design point at 8,420 feet elevation is shown. The avalanche is subdivided into "Red" and "Blue" zones of avalanche hazard severity.

SCALE: 1" = 400'



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# Avalanche Flow Thickness

## CCVR6 -- Lot 2

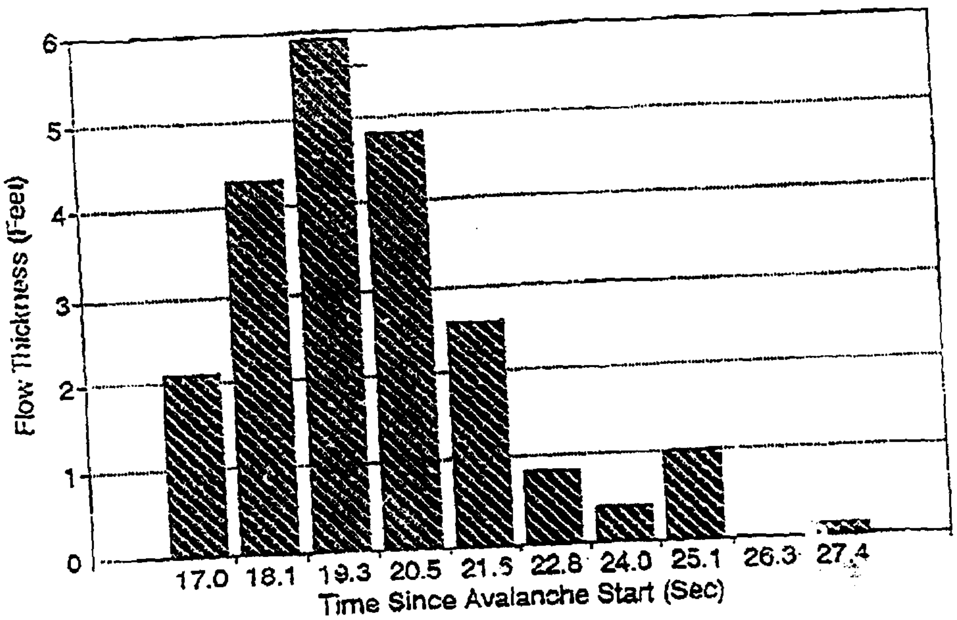


FIGURE 2. Avalanche flow thickness at the 8,420-foot elevation level. This flow height distribution can be used in mitigation design at this location, however only flow thickness in time intervals 2, 3, and 4 would be used.

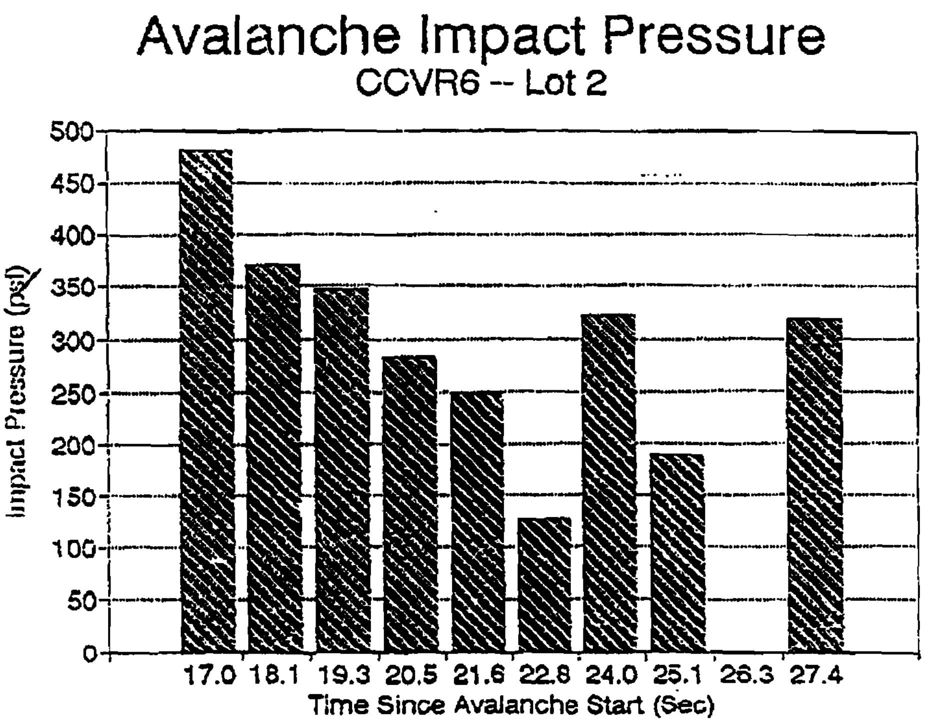


FIGURE 3. Avalanche impact pressure distribution at the 8,420-foot elevation level. This pressure distribution assumes a rigid, flat surface normal to the flow direction. The pressures in time intervals 2, 3, and 4 would be used in design because these correspond to the maximum flow thicknesses.

6-30-93

#358378 06/30/93 15:39 Rec $35.00 BK 716 PG 475
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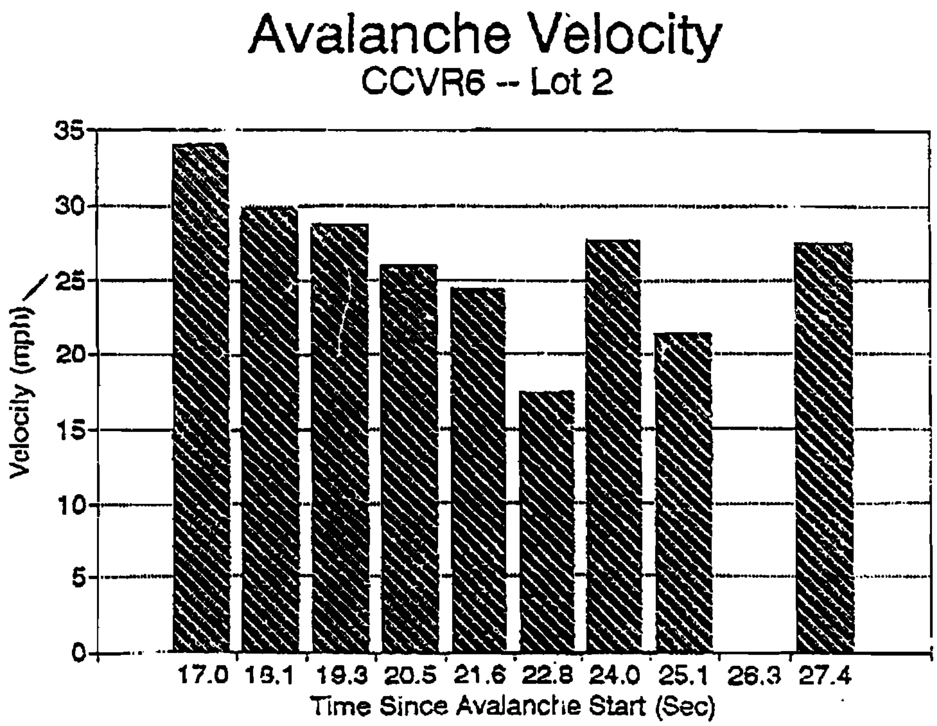


FIGURE 4. Avalanche velocity distribution at the 8,420-foot elevation level. The velocities in time intervals 2, 3, and 4 would be used in design because these correspond to the maximum flow thicknesses.

6-30-93

#358378 06/30/93 15:39 Rec $35.00 BK 716 PG 476
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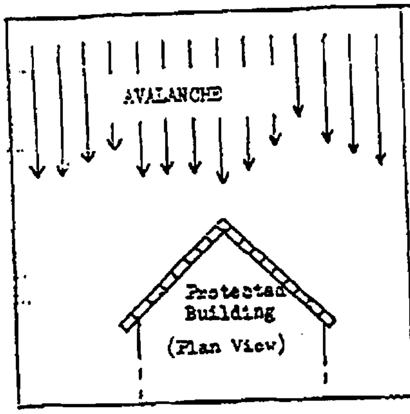


Figure 5. Splitting wedge

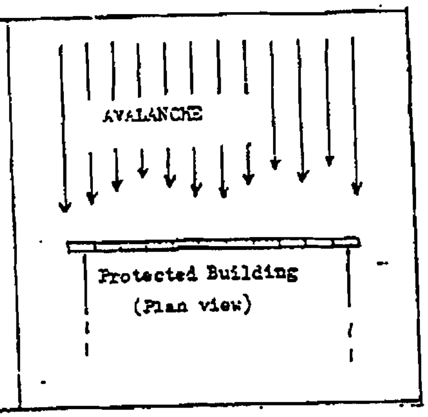


Figure 6. Reinforced wall

The splitting wedge, or uphill building corner pointed toward the avalanche (Figure 5), reduces avalanche loads and protection wall height requirements. If a 45° angle between the flow direction and wall is maintained, unit forces may be reduced to roughly 25% of those computed in Figure 3. Building the protection wall normal to the flow (Figure 6) will require a shorter length of reinforced wall surface, however the forces will be larger. Regardless of which protection system is used, the avalanche loads will be moderate and can easily be accommodated in design.

As noted previously, the avalanche forces are highly dependent on building location. If the site is located a short distance downhill, forces will be greatly reduced or even eliminated. Final design will require a site-specific evaluation.



6-30-93