

ADDENDUM 1
TO THE
FINAL STORM DRAINAGE AND
EROSION CONTROL REPORT
Indian Hills Village, PUD

Submitted to

Wonderland Custom Builders
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Fort Collins, Colorado 80525



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Ayres Project No. 34-0252.00
c:\working\ind-hill.cp

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Formerly Resource Consultants & Engineers (RCE)

March 20, 1995

Mr. Basil Hamdan
City of Fort Collins
Storm Drainage Utility
235 Mathews
Fort Collins, Colorado 80524

Re: Addendum 1 to Indian Hills Village PUD, Final Drainage Report

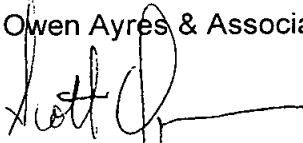
Dear Basil:

Enclosed please find our report entitled, "Addendum 1 to the Final Storm Drainage and Erosion Control Report for Indian Hills Village PUD." This report and the work it represents meet the criteria in the Fort Collins Storm Drainage Design Criteria, dated May 1984.

If you have any questions, please call.

Sincerely,

Owen Ayres & Associates, Inc.



Scott Queen, P.E.
Civil Engineer

BSQ:bbv
Enclosure

**Addendum 1
to the
Final Storm Drainage and Erosion Control Report for
Indian Hills Village, PUD**

I. Introduction

Following the completion and Final Approval of the Final Storm Drainage and Erosion Control Report for Indian Hills Village, PUD, prepared by Stewart and Associates, Inc. and approved on January 10, 1995, the developer chose to replat a portion of the PUD and reconfigure drainage facilities along the west boundary of the project. This Addendum to the above-mentioned report discusses the reconfiguration. All computations performed by Ayres Associates are included in the Appendix of this Addendum.

II. Replat

The developer of the Indian Hills Village PUD desired to rotate Lots 38, 39, and 40 from their original north-south orientation to an east-west orientation. This rotation resulted in the elimination of Daemian Drive from the plan as well as the northern length of Private Driveway G which connects to Indian Hills Circle. Private Driveway G was extended to the north to connect with Private Driveway H. Under the replat, the entire private driveway along the west boundary is named Private Driveway G.

III. Grading and Drainage Modifications

The developer desired to reconfigure the grading and drainage along the western boundary of the project to address groundwater and surface water concerns. The finished floor elevations for Lots 46 and 47 were raised approximately three feet in order to raise basements and minimize groundwater problems. The 3-foot increase in finished grade elevation was tapered to no change (from Stewart's original design) along Indian Hills Circle to the east and Lot 35 to the south. The drainage divides under the reconfigured condition agree with the drainage boundaries shown in Stewart's original drainage analysis, making it possible to use the runoff quantities calculated by Stewart for this addendum. Additionally, the grading limitations along the west boundary (6-foot tree zone, limited excavation areas and depths) were incorporated into the Ayres design.

The main modification to the Stewart design includes the creation of a sump area along Driveway G just south of Lot 41. This modification was incorporated so that surface drainage along the west boundary at Lot 47 would be minimized and the design limitations for that lot under Stewart's design (i.e., basement wall serving as a floodwall) be eliminated. Under the Ayres design, approximately 31.3 cfs (100-year) of surface drainage from the west side of the project and offsite basins will collect at this sump location. From there, 28 cfs will be conveyed by 30" diameter ADS N12 storm drain pipe to the north along the alignment originally laid out by Stewart, draining into the area inlet at Stewart Concentration Point 11. The remaining 3.3 cfs will flow to the east over a low point in the utility easements along the front of Lots 41 through 43 and flow north along Indian Hills Circle to the 10-foot catch-basin near the north end of Indian Hills Circle. Note that no surface drainage will continue to the north along the western boundary, thus eliminating the restrictions on Lot 47. The street capacity of Indian Hills Circle will not be exceeded with the additional flow. The catch basin, however, does not have

additional capacity. The additional 3.3 cfs combine with 5.5 cfs overflow under Stewart's design resulting in 8.5 cfs overtopping the curb and flowing west to the area inlet at Stewart Concentration Point 11. The swale section along this overflow has been slightly modified from the Stewart design to allow for this additional flow. A cross section is shown in the Appendix as well as on the plans. Under the proposed design, the 100-year discharge reaching Stewart Concentration Point 11 will be no different from the Stewart design since drainage boundaries and time of concentrations will not have changed. Thus, the storm drain pipes from Stewart Concentration Point 11 passing under Stuart Street to Spring Creek are adequately sized to pass the 100-year runoff.

All 2-year flows will be contained in the underground storm drainage pipe along the west boundary, so there are no modifications to the Stewart design to alleviate problems related to that return-period discharge.

Additional modifications include an improved drainage swale configuration along Driveway G. The section will consist of 12 feet of 5.5-inch full depth asphalt beginning at the lot lines along the east side of the drive. The asphalt section will slope to the west to a 4-foot wide concrete "V" pan. From the edge of the "V" pan, full depth asphalt will extend for 5.5 feet. The resulting driveway width will be 19.5 feet and the low point in the drainage swale will be located directly over the underground storm drainage pipe. The swale section has a capacity of approximately three times the 100-year discharge.

IV. Erosion Control

The only modification to Stewart's erosion control design is the addition of a gravel filter around the new proposed grated inlet along Driveway G.