

Lenzi, Chelsea

From: Mark Brooks <Mark@brookscorp.net>
Sent: Monday, March 19, 2018 2:48 PM
To: sbcob
Cc: Patti Stewart (pjsstewart@verizon.net); Hartmann, Joan
Subject: Brooks/Stewart Appeal of the Golden Inn Development Plan Revision
Attachments: 2018.03.19 18-036 Golden Inn Hydro Review.pdf

Clerk of the Board,

We would like to submit the attached Hydro Review to the Supervisors for their consideration for the Brooks/Stewart Appeal of the Golden Inn & Village Development Plan Revision, Board of Supervisors Hearing on March 20, 2018

BROOKS CONSTRUCTION
MARK A. BROOKS
GENERAL CONTRACTOR
LICENSE No.931078

POST OFFICE BOX 3
SANTA YNEZ, CA 93460
PH. (805) 680-2066
FAX (805) 690-7300
mark@brookscorp.net
www.brookscorp.net



PO Box 199
Cambria, CA 93428
805.706.0401

March 19, 2018

Attn: Mark Brooks

Brooks Construction
PO Box 3
Santa Ynez, CA 93460

Subject: Golden Inn and Village Development

Regarding: Hydrologic Review of Pass-Through Storm Water

Mr. Brooks,

Per your request I have reviewed plans prepared by RRM Design group for the above referenced project. The grading plans for the project were reviewed in comparison to predevelopment topography in an effort to identify possible changes to the flow characteristics of drainage intended to "flow through" the proposed project.

Background

Preliminary grading plans for this project were originally prepared by eda Design Professionals and processed by Peikert Group Architects. Prior to approvals, eda went out of business and Peikert Group hired CDS to make last minute changes to the preliminary plans. CDS also performed a review of the preliminary hydrology report prepared by eda, with reference to the proposed site plan changes.

The hydrology study prepared by eda was not a thorough report and was prepared only as a preliminary document for use with project entitlements. The site plan changes requested by Peikert Group were relatively minor in nature, and the hydrology report was vague, therefore it was noted that the eda report was sufficient for use with the revised site plan.

The hydrology report identified a tributary area to the north of the project that this project would accept and pass flows through the project site. The document did not estimate the quantity of run-on flows, nor did it analyze the proposed conveyance channel through the project. It was assumed that a complete report including calculations would be required and prepared at the time construction documents were prepared.

CDS has not been provided with, or reviewed, a final hydrology report or calculations used to justify the design of the project.

The purpose of this letter is to provide a review of the flow characteristics of the pass-through flow, at the southern boundary of the site in the pre and post development configuration.

Method

Cross sections for the pre-development condition were developed using topography from CDS files.

Cross sections for the post-development condition were developed using the as-built grading plans prepared by RRM Design Group and provided by Mark Brooks

Flow data for the northerly tributary area was estimated using the ration method.

The tributary area was estimated using USGS topography.

Manning's Equation calculations were used to derive flow depth and velocity for each cross section, given the flow data as calculated below.

CS

Flow Data and Calculation

Rational Method Formula: $Q=CIA$

$C = 0.45$ (residential neighborhood with sandy soils)

$I = 3.14$ inches per hour (per NOAA frequency estimates, 25 year, 10 minute storm)

$A = 88.5$ Acres

$Q_{25} = 125$ CFS

It is assumed that the upstream tributary flows have not changed between the pre and post development conditions, therefore the same flow rate of 125 CFS is used for both cross sections. Flows tributary from the development site are neglected for the purpose of this review.

Pre-Development condition:

Post-Development Condition:

$Q = 125$ CFS

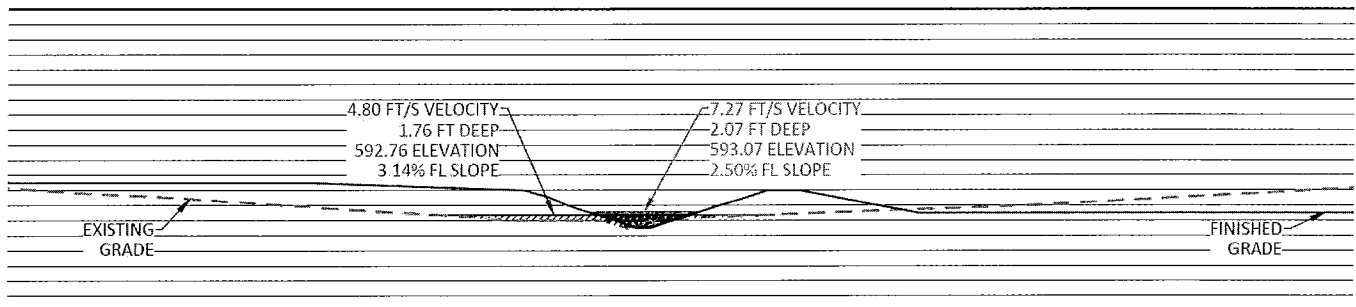
$Q = 125$ CFS

Velocity = 4.80 Feet per Second

Velocity = 7.27 Feet per Second

Depth = 1.76 feet

Depth = 2.07 feet



Conclusion

It is my professional opinion that the project grading modified the drainage course for pass-through flows by modifying a previously meandering flow line to a more defined drainage channel. In doing so, the flow characteristics of the pass-through flow were changed. As noted above, for a 25-year event, the depth of flow increased by approximately 18 percent. For the same event, the velocity of the flow increased 51 percent.

Other factors that can compound these effects can include increased runoff from the project site being directed to approximately the same location, and channelizing flows with the use of pipe. It is also important to note that this analysis only reviewed one possible storm event. Actual storm intensity and duration can greatly effect, intensify, the changes to the flow path.

If you have any questions regarding these findings, please contact me.

Regards,

Robert Winslow, PE
Principal Engineer

