

Waipuilani Affordable Housing

Drainage Design

Review of Report and the Calculation

The calculations in the Drainage Report appear reasonable. The problem with the drainage of this property is most likely not in the calculations but in the property itself and with approving the systems as proposed. These concerns are as follows:

1. The property is a AH floodway zone with water depth during storm events covering the property one to three feet. See County Ordinance 1962.06. While this may comply, it is not demonstrated **that it does comply** with site buildings.
2. The proposed drainage system is complex under most of the driveways with permeable pavements that can easily clog with any silt load from up stream.
 - a. These private systems must be maintained by the owners. This system could be very expensive and may require replacement of the permeable pavement in order for them to work as designed.
 - b. The County Ordinance 15-04-06 requires the knowledge of ground water elevation to install such a system.
3. The County Ordinances do not require that there be less runoff from the site only that the rate of runoff shall be no more than the existing rate of runoff and no damage occurs downstream. This means that there is more total flow and silt into the ocean with inadequate drainage system downstream.

Conclusion: If I was in a position to handle the approval of this system, I would be very reluctant to approve it as I don't believe it is a good drainage solution as it only works if it is properly maintained. Relying on a home owner's association to properly maintain this system is poor public policy in my opinion.

County Ordinances

19.62.06

Within zones A, AH, AO, and AE, except where there is a designated floodway or flooding caused by coastal run up, no new construction, substantial improvement, or other development (including fill) shall be permitted unless it is demonstrated that the cumulative effect of the proposed construction, substantial improvement, or development, when combined with all other existing and anticipated construction, substantial improvement, and development, **will not increase the water surface elevation of the base flood at any point.**

15-04-06 Design Standards

(8) Outlet velocities of Storm waters leaving culverts and channels shall not exceed existing drainage velocities when entering existing drainage ways.

(9) Subsurface drains may be installed when approved by the Director, **provided no ground water is encountered or will be encountered during wet weather.**

(10) In areas where existing drainage systems are inadequate, the existing systems shall be upgraded to handle runoff from the new project area or a new system shall be provided to connect to an adequate outlet. When there is no existing drainage system or adequate outlet to connect to, the additional runoff generated by the development may be retained on-site in a temporary retention basin with the following conditions:

(A) Storage volume of an infiltration basin...shall be equal at least the total additional runoff volume for the appropriate storm intensity.

(D) Sumps, detention facilities **shall remain private.**

15-04-06 The design and Capacity of the drainage system shall be based on the following conditions:

(2) System must have maximum **reliability of operations with minimum maintenance and upkeep requirements.**

(8) Outlet velocities of storm waters leaving shall not exceed existing drainage velocities when entering existing drainage ways.

Traffic Waipuilani Affordable Housing

1. The traffic analysis looked at five intersections affected by this development. The analysis of the traffic appeared reasonable; however, the existing traffic was based on traffic counts in 2017 and 2021. More resentive traffic counts are being reviewed and will be available in early November 2021 from Maui MPO.
2. Two of the five intersection are working with traffic during peak hours at unaccepted levels of service. These are the two intersections on South Kihei Road at Waipuilani and Kauhaa.
3. The report shows that these two intersections will degrade in ability to handle traffic. However, the degradation is small only a few percent (1% and 2%).
4. The traffic analysis only shows the traffic on opening day and not the effect in the life of the project or twenty years.
5. The proposed driveway on Waipuilani is immediately adjacent to another driveway. This is not a desirable condition.
6. There are no proposed mitigations of the damage caused by the traffic impact.

Conclusion:

This traffic report is similar to other I have seen in South Maui. The numbers are reasonable but I am not pleased that we keep adding traffic, be it ever so small, without mitigating any of the damage to our road system.

(Since the County is unable or unwilling to mitigate the damages caused by development, perhaps a traffic fee should either be paid by the developer or the County.)