1. The proposed subdivision will need to have curb, gutter and sidewalk as per the county commission. As a bare minimum there will need to be a deferral on the curb, gutter and sidewalk, which has been signed by the developer prior to final approval.

   *It was agreed that an asphalt community pathway would be installed throughout the project and that a deferral agreement would not be required.*

2. Please update the typical road section on sheet TS1 to include the riprap size in the ditch and three inches of 1 & 1/2 inch rock over roadbase in the shoulder.

   *Added note to typical section to add 1.5" rock to the shoulder.*

3. Flow calculations for the streams running through the culverts will need to be included in the drawings.

   *Added DR10 to show drainage basin and calculation data for proposed roadway culvert crossings of existing drainage basins.*
   *Flow data was taken from USGS StreamStats*
   *https://streamstats.usgs.gov/ss/*

3b. Please provide the flow calculation for the check dam rip rap table on sheet DR4, along with the velocity calculations on the many rip rap sizing tables. Help me understand where these numbers are coming from.

*Apologize that this was not explained very well in the previous comment response. Please call to discuss if you have any questions on this.*

*To determine the min. rip rap diameter used in drainage swales, the estimated maximum peak flow and velocity was used. The area evaluated to determine "worst case scenario" was from Basin 133 on the drainage overview sheet DR1. Flows generated from the 10-year storm on Road A from station 101+90 to 133+40 were calculated using half of the right-of-way (drainage basin) to determine the flows expected in each the roadside ditch. The max flow was calculated to be 3.91 cfs. At the steepest section (slope is 12%) the velocity in the ditch at this slope was calculated to be 7.02 ft/sec.*

*The isbash equation was used to determine the minimum diameter (5.78 in) rip rap needed to withstand the highest calculated velocity. 6" rip rap has been called out for the construction of check dams as indicated on the DR sheets (DR1 and DR4). In addition, the ditch paralleling the retaining walls are shown to be lined with rip rap to ensure that there is no risk of erosion along the base of the wall (see DR1). Because highest velocities are expected in areas with road slopes over 10%, check dams with 6" rip rap have been proposed at a minimum of 400-foot intervals. See Sheet DR4 for proposed check dam detail and DR1 for approximate check dam locations.*

*(see below for flow calculation and rip rap sizing on check dams in drainage swales)*

*Minimum rip rap at the end of pond inlets and outlet pipes has been calculated on shown on individual tables on the DR sheets. Sizing is based off of calculated velocities in each pipe.*

| 1/2 Drainage Basin 133 | | |
|---|---|---|
| Area | 103,998.04 | sf |
| Area | 2.3874665 | acres |
| C | 0.65 | |
| i | 2.52 | |
| Q= | 3.9106701 | |
| | | |

| Calculated from open channel flow | | |
|---|---|---|
| Q= | 3.92 | |
| V= | 7.02 | 4:1 V ditch @ 12% |
| n | 0.025 | Natural Channel |
| d | 0.374 | |

**RIP RAP SIZE**

$$D_{50} = \frac{V^2}{2 \cdot g \cdot C \cdot (S - 1)}$$

Isbash Equation

| Check dam rip rap | | | |
|---|---|---|---|
| V= | 7.02 | ft/sec | |
| C= | 0.86 | | |
| S= | 2.85 | | |
| G= | 32.17 | | |
| $D_{50}$ | 0.48 | ft | |
| | 5.78 | in | Used 6" rip rap for check dam |

*We added some additional check dams see DR1*

4. On sheet TS1, the sewer and water district names need to be corrected.

   *Revised water notes to Nordic Mountain water and changed city on sewer note to WCWSID.*

5. On sheet PP1 near station 94+00 on the south side of the road, an additional storm drain inlet should be added to this low point. Also on PP12 and PP13 at the low point of the cul-de-sacs. Depending on flows, additional inlets may be necessary to collect runoff in the roadside swales.

   *Added additional CB at 94+57 (SEE PP1).*

   *PP12 - The cul-de-sac's have been designed to have one low point at the proposed location of the catch basin. An additional catch basin has been shown so there is a double inlet in this location. (See DR5) Ditch flowline elevations have been added.*

   *PP13 the cul-de-sac has been redesigned and there are two catch basin at the throat of the cul-de-sac. See DR6 for storm drain design.*

6. On sheet PP4 near station 136+50, the proposed check dam may create a conflict if an access road is connecting to the road at this point.

   *Moved check dam just upstream of possible future road connection 126+25*

7. On sheet PP5 and PP14, please add a slope label to the finished grade.

   *Added slope label on these sheets*

8. On sheets DR4 through DR9, please add some major contour labels in the plan view.

   *Added Contour labels on the ponds.*

9. On the sewer conveyance line, a drawing set will need to be added to Frontier. A letter of UDOT approval will need to be submitted. Approval of a stream alteration permit for the sewer line crossing North Fork will need to be provided. An excavation permit to cross 2500 North will need to be acquired prior to the work starting. Where the sewer line runs outside of the right-of-way, easements will need to be acquired. A cost estimate for the escrow will need to be submitted.

   *An approval letter from UDOT will be provided along with plans showing the alignment of the conveyance system. Regarding the stream alteration permit, the following direction was received from Daren Rasmussen at the state and will be followed, "If you are greater than twice the bankfull width from the channel with construction activity (bore pits, etc) and are deeper than 3ft below channel bed, then no Stream Alteration Permit is required." Where appropriate, easements will be secured and excavation permits will be acquired.*