



September 14, 2020

BrieAnna Simon
Associate Planner
Town of Parker
20120 E. Mainstreet
Parker, CO 80138

RE: Douglas 234 Filing 5 Minor Development Plat – Engineering 2nd Review

Ms. Simon,

Please accept this letter as our response to engineering comments on the Douglas 234 Filing 5 Minor Development Plat Engineering 2nd Review as provided in the letter dated July 16, 2020. Responses to these comments are included in blue beneath the original comments.

MDP Minor Development Plat

1. Please clarify if a multi-use utility easement is being dedicated or if the applicant is planning on dedicating overlapping drainage and utility easements.
RESPONSE: A 50' multi-use utility easement is proposed until the sewer turns east, then a 25' drainage easement continues north. We have revised the plans and plat to clarify.
2. Label Tract A on the plat.
RESPONSE: We have revised the plat to label Tract A.

CP Road and Storm Construction Plans

3. Please provide elevations on the existing grading contours along the east side of the property.
RESPONSE: We added existing contour labels to the slope along the east side of the property and elsewhere throughout the plans to improve clarity.
4. On future submittals, provide a turning template for the largest tanker truck that would use the future gas station and ensure Sliceroo is adequately designed to accommodate.
RESPONSE: We have added a truck turning template plan sheet to the set to illustrate how a WB-50 can successfully articulate the entry, exit and internal truck turning movements. A WB-50 is the largest anticipated vehicle to serve the property.
5. Label the proposed crosswalk striping as 2' x 10'.
RESPONSE: We have labeled the proposed crosswalk striping as 2'x10'.
6. Please incorporate any changes warranted by the Traffic Study and the Traffic Study comments in the signing and striping plan.
RESPONSE: We have revised the signing and striping plan per the changes warranted by the traffic study as requested, see revised plans attached.

UP Utility Plans

7. Add the following note to the Overall Utility Plan:
“The proposed utility connection will require a Town right-of way permit prior to commencing work. The Town prefers connections to be bored to the extent possible, and any street cut allowed by the Town will be required to be patched according to the Town’s construction standards and details. The limits of patching will be determined by the Town a the time of construction. The Town of Parker does not allow roadway closures for utility work.”
RESPONSE: We have added the note as requested.

SP Site Plan

8. Relocate the tree proposed within 7-feet of the storm sewer on Lot 9.
RESPONSE: We have relocated the tree as requested.

TS Traffic Study Comments

16. Trip Generation Project Description, Table 3:
 - a. Trip generation with non-standard reduction methodology performed by Ann Bowers/Fehr+Peers was submitted to the Town in May of 2020 for review. Volumes from that memo submission do not match the volumes submitted with this memo.
RESPONSE: The land uses were modified after submittal of the May 2020 trip generation numbers. The trip generation was updated by Ann Bowers/Fehr & Peers to reflect the change in land use.
 - b. ADT volumes were not supplied for 2 uses. ADT needs to be calculated and updated total volumes supplied.
RESPONSE: There have not been any daily or AM peak hour studies of automated carwashes published in the ITE Trip Generation Manual, 10th Edition (2017), so no trip rates are provided. A planning level estimate would be that the daily trips will be approximately 10 times the number of PM peak hour trips, however that number has not been included as it is not verified by trip generation studies
 - c. No volumes for AM Peak associated with Carwash were included in the table. Please update.
RESPONSE: Like the carwash, ITE does not include daily trip rates. It does include Saturday daily trip rates, however, they would likely overestimate the number of trips to be expected in a typical weekday
 - d. Trip Generation revisions – please review ITE Calculations. Utilize fitted curve equation where provided by ITE.
RESPONSE: So noted.

- e. Note that Pharmacy WITHOUT drive-thru was proposed. This is acceptable, however this would be a first for Parker as all other prior pharmacies have included a drive-thru component. Revise if needed.

RESPONSE: Trip generation table has been revised to “Pharmacy with drive-thru window”.

16. Trip Distribution, Exhibit 5:

- f. Note that 25% of total site traffic was assigned to a RIRO serving a single lot (40% in the long-term). This is not acceptable. Only the percentages of traffic that would enter that lot from Red Sky in accordance with the larger trip distribution should be assigned.

RESPONSE: Comment noted. Trip assignment has been revised to account for vehicles entering LOT 1 only.

- g. Neighborhood traffic north of the site shows a difference between short and long term. Please provide expanded reasoning as neighborhood is built out.

RESPONSE: For the long-term, a few additional traffic (2% more or equivalent to 9 peak hour trips) is assumed from the north based on the large increase of traffic in the long-term along Chambers Road, cut-through traffic through internal streets from the north is possible. See updated discussion in Section 3.2.

- h. Difference between short and long term in percentage bypassing RIRO on Hess. Short term assigns 5% to the right turn at Chambers/Hess, but is deleted in the long term. Please provide expanded reasoning.

RESPONSE: For the short-term, 61% of traffic is assumed to come from the east on Hess Road. Due to the high number of volumes, it is assumed that some of those trips (~5%) would pass-by the first driveway. In comparison, the long-term traffic assumed from east of Hess, is approximately half of the short-term trips (29%), therefore, no pass-by is assumed at the project driveway on Hess Road. See updated discussion in Section 3.2.

- 11. Project Volumes, Exhibit 4, 13: Some turning movement discrepancy was noted. For example, the WB to NB right turn shows an existing volume of 368 in the PM peak, but the long term shows a drop to 345. With background traffic nearly doubling from 22k to 43k it would seem counter intuitive that this movement would decrease. Please review and comment.

RESPONSE: Once the 4th leg of Chambers and Hess intersection is built, traffic patterns are assumed to shift in the long-term. Some of the westbound right traffic volumes from Hess Road headed north on Chambers Road, will now be coming from the new southern Chambers Road leg. This is consistent with the Anthology Study assumptions, as the long-term volumes were derived from that study. See updated discussion in Section 3.2.

- 12. Driveway analysis – Hess Rd RIRO to/from project site. Total approach LOS E noted long term, though is a single lane. Queue per Table 8 is 284’ which may extend beyond

first parcel driveways. Need discussion of LOS D criteria per approach and how E might be approved without diverting traffic into neighborhood or shifting trips to north exit.

RESPONSE: Per the Town's Roadway Design and Construction Criteria Manual Section 5.6.5.1, "No approach or movement of an intersection shall fall below LOS E". Following these guidelines, the SB approach and SB right movement is operating at LOS E and not below LOS E. In addition, the SB queues shown for the long-term are within the private property limits.

13. AM peak analysis: general. Long range failing LOS at Chambers/Hess will require longer than 120 second cycle length. Town recommends review with 140 to 150 seconds. Also note that yellow and all red times are not consistent with standard operations – yellow of 4.5 seconds, all red of 2 seconds is standard for Chambers.
RESPONSE: The signal timing for the long term has been revised to 150 second cycle lengths and 4.5 second yellow for the main streets and 3.0 for side streets (per further discussions with Town) and 2 second red.
14. PM peak analysis: general. Long range failing LOS at Chambers/Hess will require longer than 120 second cycle length. Town recommends review with 150 seconds. Also note that yellow and all red times are not consistent with standard operations – yellow of 4.5 seconds, all red of 2 seconds is standard for Chambers.
RESPONSE: Same response as above.
15. Queue analysis/geometrics-Table 8:
 - a. Table 8 shows southbound left queue of 492' at Chambers/Red Sky. If this is correct, value exceeds the length of the existing bay and mitigation will need to be provided. Town staff was unable to discern a queue equal to this value, and in fact operation seemed reasonable on model observation. Please double check this output.
RESPONSE: Queuing has been re-run with revised signal timing.
 - b. Table 8 shows only 91' of WB left turn queue at Chambers/Red Sky. Town staff unable to duplicate this value in model testing/verification, and SimTraffic model observation noted queues and operations that exceeded the capacity of a single WB to SB left turn. Town efforts to date show traffic backing into the roundabout which is unacceptable from a safety point of view. Further meeting may be necessary to understand outputs and reports provided.
RESPONSE: Same response as above.
 - c. WB left turn queue at Chambers/Hess appears low per modeled expectations and reported LOS. Town model suggests left turn queue exceeds the turn bay length. Discussion of how vehicles will enter turn bay for WB to SB left as defined in the trip distribution should be provided.
RESPONSE: Additional westbound left turn lane is now proposed for the long-term scenario to mitigate queuing.

16. Site Plan – note that internal street network curvature especially at the southern end and at the roundabout may be too tight for some vehicles such as fuel semi-trucks or South Metro Fire apparatus. Turning templates should be provided outside of traffic study to verify viability of layout.
RESPONSE: We have performed truck turning movements using a WB-50 truck, the largest vehicle that would be anticipated for the future gas station use.

SR Stormwater Review Comments

Road and Storm Construction Plans

1. Sheet 18: Revise the INL-10 and INL-11 rim elevations to match the top back of curb.
RESPONSE: We have updated the inlet elevations to match the top back of curb as requested.
2. Sheet 18 & 19: Velocities downstream of inlets INL-1, INL-2, and INL-5 are particularly high. Add vertical drops (4' max) at the structures to reduce the pipe slopes and resulting velocities (normal flow) below 20 fps.
RESPONSE: We have revised the design to reduce the pipe velocities below 20 fps, see the revised drainage study included with this submittal and revised storm vertical designs.

Grading and Erosion Control Plans

INITIAL CBMP PLANS

1. Provide IPCOS for the sump inlet on Red Sky Drive.
RESPONSE: We have added an IPCOS to the sump inlet on S. Red Sky Drive east of our project as requested, see revised plans attached.
2. Revise the IPAN for the existing area inlet adjacent to the single-family lots to graphically show on top of the existing inlet.
RESPONSE: We have updated the graphic depiction of the IPAN as requested.

Please let me know if you have any questions concerning this response letter and/or the enclosed documents.

Sincerely,

Jack Scanlon, PE
Principal Project Engineer
RICK ENGINEERING COMPANY