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To: Phil Kleisler From: Hannah Hippely, AICP, Long-Range Planning Manager Subject: CU South Annexation Date:7/28/2021

Boulder County's Department of Community Planning & Permitting has the following comments related to the annexation agreement released July 12, 2021. These comments supplement the comments previously provided on 6/28/21.

County staff has reviewed the annexation agreement for concordance with the Boulder Valley Comprehensive Plan (BVCP) and the CU South Guiding Principles and has the following comments.

### **Roadway Bypass**

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> According to the BVCP the site will not include roadway bypass between Highway 93 and Hwy 36, this is a prohibited use. The annexation agreement defines roadway bypass as "an uninterrupted roadway on the Property between State Highway 93 and State Highway 157 (Foothills Parkway), the design of which would incentivize its use as a "shortcut" between State Highway 93 and State Highway 157" and interrupted roadways as those which "may include traffic circles, speed control devices and other traffic mitigation improvements". Therefore, under the proposed annexation agreement so long as the road linking State Highway 93 to Foothills Parkway/US 36 does not incentivize traffic and includes a traffic circle it would not be considered a by-pass regardless if it could be used as a by-pass. However, if Hwy 93 is connected it could easily become an attractive bypass to Foothills Parkway through CU South even if the internal street network is designed to discourage this. The existing connection using Broadway and Table Mesa Dr is roughly twice the distance of any route through CU South, so even if a through street is designed as a low speed street, it could provide drivers the shortest travel time. Even designing the street for a very low 15-20mph design speed could result in this new connection providing a shorter travel time given that Broadway and Table Mesa have 35-40mph speed limits but are twice the distance. In the era of Waze and Google Maps, any congestion on the arterial roads could tip the scales in favor of drivers cutting through CU South. The current annexation agreement is not in accordance with the intent of the BVCP and its stated prohibition on a by-pass. This direction is also consistent with the safety issues raised below in the transportation section. In order to prevent this from happening, we offer the following suggestion: ensure that the CO 93 access is disconnected (for private motor vehicle travel only) from the Tantra and South Loop Dr accesses, either by not creating a new through street, or gating off this connection similar to what is done on Main Campus.

## Land Use Mix

Staff continues to have concerns with the proposed Land Use Mix. The CU South Guiding Principles contemplate recreational, non-residential uses for the convenience of residents and other site users, and academic facilities but it also is clear that housing is to be the predominant

use of the site and development is to emphasize housing over non-residential space. Non-residential space footprint is to be minimized.

As proposed the recreational use of this site could be a substantial component of the development where the primary use intended under the BVCP was housing for faculty and staff, some additional information on the scale and nature of this use and parameters around this use would be helpful, the traffic study did not contemplate either substantially developed recreation fields or a sports venue.

The developer is responsible for constructing a multi-modal mobility hub on the site and per the annexation agreement, "the initial hub improvements will be constructed prior to completion of the first non-residential Building." Does this preclude the construction of recreational structures until after the initial hub improvements are made? Does the City anticipate that these initial hub improvements will be made within the first three years when the e developer is allowed to build recreational buildings? Would the initial hub improvements include any buildings?

The means by which the annexation agreement proposes to ensure that housing is the primary use is to require in the Development Zone that "residential a mix of uses will be phased according to a ratio of two square feet of enclosed residential floor area to one square foot of enclosed non-residential floor area." Additionally, "the cumulative floor area of all non-residential Buildings will not exceed 750,000 square feet". Under this scenario if the developer were to build the maximum amount of square footage they would be required to have also constructed 1.5 million square feet of residential square footage. However, there is nothing in these requirements that results in a certain number of dwelling units being constructed. For example, the developer could build 375 dwelling units of 4,000 square feet each to satisfy this requirement, this is well below the anticipated 1,100 dwelling units anticipated and does not support the development of housing for faculty, staff, and students. The annexation agreement should include more specifics about the number and nature of the residential development so that it achieves that stated goals of the BVCP as a development which will address the existing housing shortage and provide CU students and faculty with housing.

As stated in the BVCP "the site will emphasize housing units over nonresidential space (jobs) to help balance jobs and housing in the community". The annexation agreement proposes to allow up to 750,000 sq. ft. of non-residential square feet in the development zone (development of square footage in the Flood Control Zone is not directly addressed or limited) but the traffic study only contemplated 500,000 sq. ft. of non-residential area. Non-residential square footage will generate additional jobs. If the developer is to effectively address the housing problem the number of residential units developed on site should be enough to provide housing for the jobs generated by the new non-residential development plus units to assist in addressing the existing issue otherwise non-residential development on this site will only add to the current housing deficit and not make any strides in balancing jobs and housing in Boulder. This imbalance has regional impacts both on the transportation system but also on the overall regional housing market. Either the amount of non-residential square feet permitted should be drastically reduced or a more detailed analysis of the housing impacts of the development should be provided and the housing to be developed on site should be clearly spelled out in the development agreement in such as way as to ensure adequate numbers of dwelling units in an appropriate mix of dwelling types is developed.

## **TRANSPORTATION**

Section 6 of the BVCP envisions a safe, accessible, and sustainable multimodal transportation system and incorporates Vision Zero safety goals. Staff has concerns about the proposal's ability to conform with the vision and goals spelled out the BVCP.

### Safety concerns about the new vehicle access to CO 93

The proposed design for the new access on CO 93 would create an unsignalized intersection where turning motorists would conflict with bicyclists and pedestrians travelling on the southern end of the Broadway multi-use path. At this location, given the downhill grade, southbound cyclists can easily reach 20 mph. This multi-use path is a very busy corridor which connects to Marshall Rd and provides access to the South Boulder Creek, Marshall Mesa, Doudy Draw and South Mesa Trailheads and Eldorado Canyon State Park, and numerous on-street road cycling routes south of Boulder. The 2019 Vision Zero Boulder Safe Streets Report identifies five trends in Severe Crashes that need to be addressed in order to meet the City's Vision Zero goal. As proposed, the new unsignalized access at CO 93 will exacerbate three of these trends (People Making Left Turns, People Bicycling, and People Walking) and significantly increase the risk of serious injury or death to people using the Broadway multi-use path.

The second-most significant left-turning crash trend identified in Boulder is left turns at unsignalized intersections, with the majority of these crashes involving bicyclists.



Bicycle crashes occur overwhelmingly in intersections or in crosswalks, with bicyclists travelling (legally) on multi-use paths against the flow of traffic the most likely to be victims of crashes.

# THE MAJORITY OF BICYCLE CRASHES occur

within a crosswalk or at another part of an intersection. Of crashes on a multi-use path or sidewalk, the bicyclist is riding against traffic about 70% of the time with one out of 28 of crashes involving this behavior being severe. Pedestrians being hit by left-turning vehicles was identified as the single most common and harmful pedestrian crash type in the City of Boulder.

The three most common — and more harmful— types of crashes involving pedestrians include:



In summary, the proposed CO 93 access will create an intersection where turning motorists, particularly those turning left into CU South, will simply not be looking for vulnerable road users on the Broadway multi-use path, particularly southbound cyclists riding (legally) against the direction of CO 93 traffic. Left-turning motorists' attention will be focused on finding gaps in the oncoming vehicle travel lanes, in a configuration known by the City of Boulder to result in severe crash trends.

To mitigate these risks, a north-south bicycle and pedestrian underpass should be provided for the Broadway multi-use path to separate turning vehicles from multi-use path users. The intersection should be signalized (even if warrants do not require it), and use protected left turn phasing, in order to minimize the risk of vehicle vs. vehicle approach turn crashes. If these solutions do not materialize, the new access should be limited to right-in/right-out only, with no left turns possible from southbound CO 93 into the site.

The BVCP CU South Guiding Principles call for "Connected multimodal systems: Incorporate connected and safe pedestrian, bike and transit systems through CU South integrated into the broader city and regional bicycle and pedestrian network, including safe street crossings, trailhead(s), soft surface recreation trails and a trail link(s) to the South Boulder Creek Trail in coordination with OSMP." As proposed the access point truncates and existing trail and creates a safety hazard.

### Concerns that the CO 93 access does not meet CDOT Access Control Standards

This new access does not appear to meet CDOT's Access Control Standards and given the hill and curve we disagree that there is adequate visibility to the north of the proposed intersection. The study concludes that only 800 feet of visibility to the north is required and that this is met. The 800 feet, however, is dependent upon CDOT lowering the posted speed limit from the current 50 mph to 40 mph. CDOT typically only changes posted speed limits if recent data collection shows that the 85<sup>th</sup> percentile of all vehicle speeds warrant a change. It is very unusual – though theoretically possible – for CDOT to actually *lower* speed limits based on empirical evidence. The analysis instead should assume that CDOT will keep the 50mph speed limit and use 1000 feet of required sight distance as a starting point.

Vehicle expected to enter or	Posted Speed of Roadway in MPH									
cross highway as determined from table 4-3	25	30	35	40	45	50	55	60	65	70
Two Lane Roadway										
Passenger Cars, Pickup Trucks	250	300	350	400	450	500	550	600	650	700
Single Unit Trucks Over 10,000 lb GVW	325	390	455	520	<mark>585</mark>	650	715	780	845	910
Multi-Unit Trucks	425	510	595	680	765	850	935	1020	1105	1190
Four Lane Roadway										
Passenger Cars, Pickup Trucks	300	360	420	480	<del>5</del> 40	600	660	720	780	840
Single Unit Trucks Over 10,000 lb GVW	375	450	525	600	675	750	825	900	975	1050
Multi-Unit Trucks	500	600	700	800	900	1000	1100	1200	1300	1400

### Table 4 - 2: Entering Sight Distance (in feet)

Source: State of Colorado State Highway Access Code

The access code also recognizes that site distances change when topography is not level as vehicle stopping distance is increased when going downhill and decreased going uphill. Section 4.3 (a) states "Table 4-2 shall be used to establish the minimum sight distance necessary for the entering vehicle. These lengths shall be adjusted for any grade of three percent or greater using table 4-4."

### Table 4 - 4: Stopping and Deceleration Adjustment Factors for Highway Grade

3% to 4.9% Upgrade, Use 0.9	3% to 4.9% Downgrade, Use 1.2				
5% to 7% Upgrade, Use 0.8	5% to 7% Downgrade, Use 1.35				

Between the proposed intersection and 600 feet to the north, measured on the centerline, the elevation change is 25' (5478' - 5453') which over 600' is a grade of 4.2%, triggering an adjustment factor of 1.2.



Thus, according to CDOT's access code the required visibility to the north of the proposed intersection should be 1,200 feet (1000' x 1.2). This is about 200 feet north of the Chambers/Broadway intersection. Actual field checks should be conducted but by looking at the Google Earth photos it appears unlikely that this condition is meet. Note that the Google photos are taken from the perspective several feet above the top of a car where as the access codes states the visibility should be measured at a height of 4.25 feet above the road.



Source: Google

Concerns about further deterioration of transit reliability at Broadway & Table Mesa

The Study recommends extending the existing southbound left turn lane on Broadway at Table Mesa by 390 feet (to achieve a 550 foot left turn lane) to avoid left turn vehicles from blocking the through lanes. This proposal will not achieve the City's goals of increasing transit mode splits, particularly for regional trips. The DASH to Louisville/ Lafayette, the AB to the airport and the FF1, FF2 and FF5 to US36 destinations and Denver all use this southbound left turn. The photo below is taken looking south just south of Dartmouth & Broadway and shows four buses stuck in PM peak hour traffic. The graphic below shows that the section between Broadway & Dartmouth and Table Mesa & 39<sup>th</sup> is one of the highest delay points in the whole Broadway/Table Mesa corridor. In fact, 85% of transit trips are delayed about 1 <sup>1</sup>/<sub>2</sub> minutes in this section.



Source: Boulder County



#### Transit Delays on the Broadway Corridor: Downtown Boulder Station to US 36 & Table Mesa in the PM peak

Source: RTD

Capital improvements are needed that provide transit users with a distinct travel time savings over a private car. Below is an example of how this could be achieved. Not only would this help the existing RTD routes, it would also help the proposed new CU-operated bus routes. This may be the best opportunity the City has for a developer to help pay for these improvements.



### Access to RTD Transit

The analysis used a 25% trip reduction from the ITE standard generation rates due "...to account for site access by transit, bicycle and pedestrian. This type of trip reduction is consistent with normal multimodal trip reductions taken in Boulder..." Unfortunately, this site is not a normal location for development in Boulder but is rather on the southern edge of the City. Almost the entire development will be outside of a <sup>1</sup>/<sub>4</sub> mile to the nearest RTD stop – the distance most often used to measure reasonable access to transit. According to the recently released <u>Boulder Transportation Report on Progress</u>: "Data shows that 87% of Boulder residents live within a 1/4 mile of a local or regional transit stop." (Page 13) As can be seen from the figure below, almost none of the site is located within <sup>1</sup>/<sub>4</sub> of mile of transit. It is very likely the 25% trip reduction used for other parts of the City is too high for this site.



It will be extremely important that the new bus system compensate for the inaccessibility of the RTD system. This would include not only new shuttles that go to the other campuses in Boulder, but also to high trip attraction locations such as the Table Mesa shopping center, Downtown and 29<sup>th</sup> Street Mall. While some of these locations around the City can be accomplished with the same route, not all primary destinations could be served by a single bus route; the routes would become too circuitous and travel times would be too long to attract riders. A more detailed transit demand study is needed to understand routings but at a minimum two bus routes are likely needed – one generally serving Table Mesa Shopping area, Main Campus and Downtown (West Route) and one serving the 28<sup>th</sup>/30<sup>th</sup> Street retail districts and East Campus (East Route).

The Traffic Impact Study anticipated that the CU Bus service would be "10-minute service for 15 hours a day." (Page 18) Note that form the user's perspective, each route must have a 10-minute frequency, not a 10-minute frequency of all the routes combined. In other words, with a 2-route system, a bus must leave CU South <u>every 5 minutes</u> alternating between the two routes to give each route a 10-minute frequency.

### **Trip Generation**

The study justifies the trip reduction rates quantified in Table 3 stating that "...the net trip rates developed for the residential component of CU Boulder South approximate actual trip rates observed during previous studies at other similar CU residential housing in Boulder that serves married students, graduate students and/or faculty." (Page 19) Presumable this is the

Smiley Court Housing Development near Colorado & 30<sup>th</sup> and Newton Court on Arapahoe & Folsom. These two existing housing locations are located steps away from the CU main campus and adjacent to the BOUND and JUMP routes, respectively. These urban environments are not analogous to the new housing locations in CU South and this will not have comparable mode splits and or vehicle trip generation rates. This underscores the above assertion that the 25% trip reduction is likely too high.

Also, Table 3 should include addition trips that associated with the proposed level of recreational development for example the sport arena and the new playing fields that will be built. This is likely ITE Trip Generation Rate number 488. Trip generation relies on a 500,000 rather than 750,000 square feet of non-residential area.

### **Traffic Impact Study Evaluation**

Boulder County staff are concerned that the vehicle flow rates used in the Study are unrealistically high, which has the result of understating the impacts CU South will have on the adjacent transportation system. In section 3.2 it states that the analysis assumed a maximum flow rate of 2,100 passenger cars per lane per hour, using the number from the East Arapahoe Corridor Project. East Arapahoe is not analogous to several key sections of the study area, specifically Table Mesa between Broadway and US 36. The East Arapahoe corridor has dedicated left turns and raised medians preventing any left turning traffic occurring anywhere other than the dedicated left turn lanes. This prevents left turning vehicles from blocking through traffic – particularly important when traffic volumes are high and left turning vehicles can have difficulty finding traffic gaps. Actual maximum flow rate depends on a number of important variables that are unique to each corridor. This includes:

- Number of buses in the corridor. Increased number of buses reduces the maximum flow rates because buses are slower than passenger cars (in acceleration and deceleration) and stop in the travel lane to pick up and alight passengers. Note that while Arapahoe only has the JUMP, Table Mesa has the AB, the FF1, the FF2, the FF5, the DASH, the 204 and the 206 (select trips).
- Number of pedestrians. Increased pedestrians reduce maximum flow rates as minimum green times for cross streets are more likely to be required.
- Lane width. Narrower lanes reduce maximum flow rates. The HCM default values are 1,900 pcplph but assume 12' lanes. The City of Boulder uses 11' lanes for several good reasons but this reduces the maximum flow rate. (Note, Arapahoe has a mix of 11' and 12' lanes)
- Unsignalized, full movement cross streets. As described above, increased number of cross streets reduces the maximum flow rate.
- Signal parameters including cycle length and Leading Pedestrian Intervals.
- Width adjacent to vehicle lanes (Lateral Clearance).
- Presence of pedestrian Mid-Block Crossings. Table Mesa between Broadway and US36 has two signalized mid-block crossings. This could reduce the maximum flow rates, however, this could be mitigated by signal coordination of up and downstream signalized intersections.

Since the intersection LOS – basically the punchline of the Traffic Impact Study – comes directly from the volume over capacity ratio, the capacity – or maximum flow rate – is extremely important to get correct. Moreover, the analysis shows that many of the intersections are very close to getting to LOS F and it is likely that reducing the maximum

flow rates could push those intersection into LOS F either for the background conditions or for the background plus projected traffic. This could have major implications for the mitigation measures required of CU for the development. It is recommended that peak hour maximum flow rates be empirically collected for the project area.

### **Trip Budget Compliance**

While trip budgets are useful performance-based means of implementing transportation related goals the measures for compliance and what happens when they are violated need to be strong enough to ensure the goals are achieved. The annexation agreement proposes monitoring and the implementation of additional measures if trip budgets are exceeded however it also states "further phases of the University development not yet underway will be placed on hold until a minimum of two monitoring reports indicate

compliance with this Agreement." If existing development is already breaking the trip budget how are the traffic generating future phases going to be modified so the trip budget compliance is maintained? Simply placing additional development on hold until existing development is compliant does not address the fact that the additional development of the future phases is likely to cause the trip budget to be exceeded again and it is too late because the development is already completed? Is there a point where no additional development may occur because the site has reached is capacity in regard to the traffic generation and the trip budget? One of the remedies listed is that the developer upon exceeding the trip budget will invest more in its transportation programs. The County would like to see a remedy that includes implementing physical changes to the roads which limit automobile access, making changes to parking availability and pricing as a stated means of ensuring compliance with the trip budget which are to be implemented upon the budgets being exceeded. So long as the road is open and parking is available and affordable those resistant to alternative modes will drive regardless of the well-funded transportation programs in place.

## Questions

What efforts are being made to prioritize transit vehicles at any of the intersections adjacent to the development?

How did the study arrive at only a 10% trip distribution for "West on Table Mesa Drive via S. Loop Drive to Broadway?" This seems low given that this would be the primary route to CU Main Campus, the Hill and Downtown Boulder and the closest grocery stores, restaurants, retail and commercial service (Table Mesa Shopping Center).

Why not use Tantra Drive as an ingress and egress? This would distribute the traffic between two existing signalized intersections on Table Mesa. The Summit Middle School is accessed via Hanover, so there does not appear to be any conflicts there.

With 1 parking space per housing unit and 1 parking space per 600 square feet of office, there will be approximately 1,900 new parking spaces for the development. Has an analysis been done that roughly corelates that amount of parking with the trip generation estimates?

### **Development Phasing**

The University is permitted to construct facilities and buildings for recreational uses until the Three-Year Anniversary of the effective date of the annexation ordinance. Up until this Three-Year Anniversary de-annexation could occur. Given the two one-year extensions of the Three-Year Anniversary proposed by the agreement there is a 5 year period where the developer could build recreational facilities and buildings which could return to County jurisdiction. In such instance the property would return to County jurisdiction with

development that would likely be incompatible with Boulder County zoning. This is an unacceptable potential outcome for the County considering the annexation agreement proposes to allow the development of recreational buildings within this three year window. For example, the annexation agreement proposes to allow "an arena, stadium, or any other type of sports facility with fixed seating" of less than 3,000 people "including without limitation a football stadium or a basketball arena". Staff presumes the stadium would be considered a Parks and Recreation use allowed in both the Development Zone (Public designated area within the BVCP) and Flood Control Zone (area designated Park/Urban &Other within the BVCP). The BVCP states "except for recreation facilities, development will be phased such that non-residential space will be phased after a significant amount of housing is built". Boulder County requests that the annexation agreement be amended to state that if facilities are constructed during the 5 year period then the university waives the ability to automatically de-annex and would be subject to Colorado law on disconnections.

Sincerely,

John J. Hoppely

Hannah Hippely, AICP Long Range Planning Manager