

LSC Responses to TIS Redline Comments



LSC TRANSPORTATION CONSULTANTS, INC.
2504 East Pikes Peak Avenue, Suite 304
Colorado Springs, CO 80909
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

Waterbury Filing Nos. 1 and 2 Traffic Impact Analysis (LSC #204220) March 11, 2022

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



Developer's Statement


I, the Developer, have read and will comply with all commitments made on my behalf within this report.


1

Date

LSC Responses to TIS Redline Comments

Page: 1

 Number: 1 Author: dsdrice Date: 4/21/2022 3:37:37 PM

- *Waterbury Filing No. 1 Updated Traffic Impact Study*, January 6, 2014
- *Waterbury Phase 1 Filing Nos. 2 and 3 Updated Traffic Impact Analysis*, October 16, 2017
- *Waterbury Phase 2 Preliminary Plan Traffic Impact Analysis*, August 3, 2017

This report is an update to the Preliminary Plan Phase 1 reports.

A list of other traffic studies in the area of study completed within the past five years (that LSC is aware of) is presented in Appendix Table 1. This study accounts for the land use, trip generation and the roadway network included in these studies.

LAND USE AND ACCESS

Site Plan 198 ¹

Figure 2 shows the location of the entire Waterbury PUD development as well as the location of the currently proposed Filing Nos. 1 and 2. The currently proposed filings are planned to include 201 lots for single-family homes. This is **21** more lots than was assumed in the 2013 traffic study for the same area (the Phase 1 Preliminary Plan area). Access for these filings will be to a new full-movement intersection (Saybrook Road) on Stapleton Road 1,150 east of Bandanero Drive. A deviation for a full-movement intersection at Stapleton/Saybrook was previously approved. A deviation for the southbound approach laneage on Saybrook was also approved. Per the request by Staff, both of these prior-approved deviations are being resubmitted on the current deviation request form. In the future, Filing Nos. 1 and 2 will have additional access through the remaining Waterbury PUD development area to Eastonville Road and the future Dumont Drive.


Sight Distance Analysis

Figure 3 shows sight-distance analysis at the proposed public street intersection to Stapleton Drive (Saybrook Road). Per the *El Paso County Engineering Criteria Manual ECM* Table 2-21, the required intersection sight distance at Saybrook Road is 555 feet, based on a design speed of 50 mph for Stapleton Drive. As shown in Figure 3, this requirement is met in both directions.


The required stopping sight distance from *ECM* Table 2-17 is 445 feet. As shown in Figure 3 this requirement is met in both directions.


Pedestrian and Bicycle Accommodations


There are two existing schools located within two miles of the site, Falcon High School and Meridian Ranch Elementary. A future K-8 school site is located just north of Falcon High School. These schools are located north of Londonderry Drive and west of Eastonville Road. There is also a regional park located northwest of the site.

 Number: 1 Author: dsdrice Subject: Callout Date: 4/21/2022 4:16:28 PM

198

 Author: kdferrin Subject: Sticky Note Date: 7/20/2022 10:57:53 AM
LSC Response: The TIS has been updated to show 198 single-family homes

 Number: 2 Author: dsdrice Date: 4/21/2022 4:16:43 PM
five

 Author: kdferrin Subject: Sticky Note Date: 7/20/2022 10:58:15 AM
LSC Response: Revised based on the updated number of single-family homes

198

1


Table 2 Waterbury Filing Nos. 1 and 2 Trip Generation Estimate													
Filing	ITE Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated			
				Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
					In	Out	In	Out		In	Out	In	Out
1	210	Single-Family Detached Housing	108 DU ⁽²⁾	9.44	0.19	0.56	0.62	0.37	1,020	20	60	67	40
2	210	Single-Family Detached Housing	93 DU	9.44	0.19	0.56	0.62	0.37	878	17	52	58	34
			<u>201 DU</u>						<u>1,897</u>	<u>37</u>	<u>112</u>	<u>125</u>	<u>74</u>

Notes:
 (1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)
 (2) DU = dwelling units

Source: LSC Transportation Consultants, Inc. Dec-20

Number: 1 Author: dsdrice Subject: Callout Date: 4/21/2022 4:31:51 PM


198

 Author: kdferrin Subject: Sticky Note Date: 7/20/2022 10:57:32 AM
LSC Response: Revised to 198 single-family homes.


Roundabout Exhibits

Provide the draft attribute table

1

 Number: 1 Author: dsdrice Subject: Text Box Date: 4/21/2022 5:05:08 PM

[Provide the draft attribute table](#)

 Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 10:58:39 AM
LSC Response: Draft attribute table has been prepared and included with this submittal.

1 Provide exhibits on updated lot and street layout

2 Include street names, widths and classifications on each approach

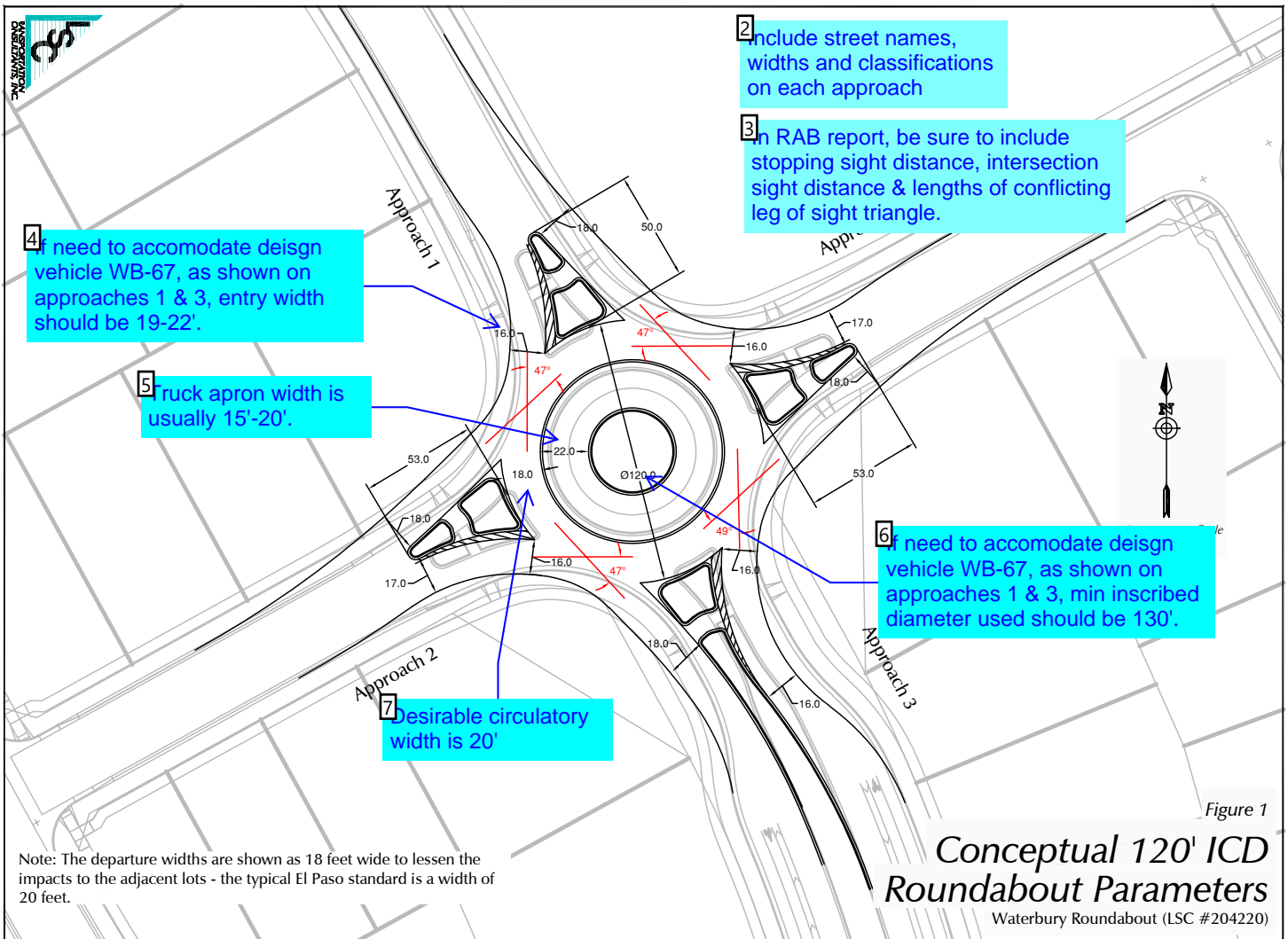
3 In RAB report, be sure to include stopping sight distance, intersection sight distance & lengths of conflicting leg of sight triangle.

4 If need to accommodate design vehicle WB-67, as shown on approaches 1 & 3, entry width should be 19'-22'.

5 Truck apron width is usually 15'-20'.

7 Desirable circulatory width is 20'

6 If need to accommodate design vehicle WB-67, as shown on approaches 1 & 3, min inscribed diameter used should be 130'.



Note: The departure widths are shown as 18 feet wide to lessen the impacts to the adjacent lots - the typical El Paso standard is a width of 20 feet.

Figure 1 Conceptual 120' ICD Roundabout Parameters

Waterbury Roundabout (LSC #204220)

Number: 1 Author: dsdrice Subject: Text Box Date: 4/21/2022 5:07:47 PM

Provide exhibits on updated lot and street layout

Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:09:17 AM

LSC Response: The base has been revised. The prior roundabout design linework has been removed.

Number: 2 Author: CDurham Subject: Text Box Date: 4/18/2022 2:07:44 PM

Include street names, widths and classifications on each approach

Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:09:33 AM

LSC Response: Added as requested.

Number: 3 Author: CDurham Subject: Text Box Date: 4/21/2022 6:14:31 PM

In RAB report, be sure to include stopping sight distance, intersection sight distance & lengths of conflicting leg of sight triangle.

Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:10:36 AM

LSC Response: These will all be included in the design report. The complete design report will be included with the CD set. The intent of this exhibit at this Preliminary/PUD stage of the process is to show that the roundabout and approach legs will work with the lot and street layout.

Number: 4 Author: CDurham Subject: Callout Date: 4/18/2022 2:05:25 PM

If need to accomodate deisgn vehicle WB-67, as shown on approaches 1 & 3, entry width should be 19-22'.

Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:23:04 AM

LSC Response: Per the 6/23 meeting with staff, LSC has added the flowline dimensions in addition to the 16.0' dimensions to reflect use of the hatched area by trucks. As shown, these added dimensions are consistent with the 19-22' shown in the comment.

The hatched area is needed to accommodate the larger trucks, without increasing the speed of passenger vehicles, and striping/pavement markings are typically used. However, as with other roundabouts in EPC, concrete or different colored pavement should be used for this hatched area in lieu of pavement markings and should be designed flush with the asphalt. The purpose is to eliminate the need to maintain hatch pavement markings.

Number: 5 Author: CDurham Subject: Callout Date: 4/18/2022 2:06:49 PM

Truck apron width is usually 15'-20'.

Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:08:01 AM

LSC Response: As discussed, the 15'-20' is acceptable provided the remaining center island can be landscaped sufficiently to limit lines of sight across/through the roundabout. The large apron is primarily needed to accommodate a WB-67 U-turn. A U-turn by a WB-67 is very unlikely; however, as shown in the truck-turning figures, a 270-degree turn is shown for a WB-67 instead of a direct right-turning movement. The larger truck apron is needed for a 270-degree "right-turn" movement.

Two concepts for design were discussed.

- 1) Use concrete for the outer portion of the truck apron most likely to be used, but use landscape blocks or colored concrete for the inner portion that may see very infrequent use by a turning WB-67.
- 2) If necessary to limit line of sight across the center circle, potentially bushes or easily-replaced vegetation could be used that may (very infrequently) be driven over by the rear wheels of a WB-67.

Number: 6 Author: CDurham Subject: Callout Date: 4/18/2022 2:04:48 PM

If need to accomodate deisgn vehicle WB-67, as shown on approaches 1 & 3, min inscribed diameter used should be 130'.

Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:12:03 AM

LSC Response: At the 6/23 meeting with staff, we discussed that the more compact 120' diameter has been used to allow for a roundabout without major impacts to the street/lot layout. The WB-67 truck-turning exhibits show the accommodation of the occasional WB-67 truck, including the larger truck apron as discussed in the above comment response.

Number: 7 Author: CDurham Subject: Callout Date: 4/18/2022 2:05:56 PM

Desirable circulatory width is 20'

Provide exhibits on updated lot and street layout

Include street names, widths and classifications on each approach

In RAB report, be sure to include stopping sight distance, intersection sight distance & lengths of conflicting leg of sight triangle.

If need to accommodate design vehicle WB-67, as shown on approaches 1 & 3, entry width should be 19'-22'.

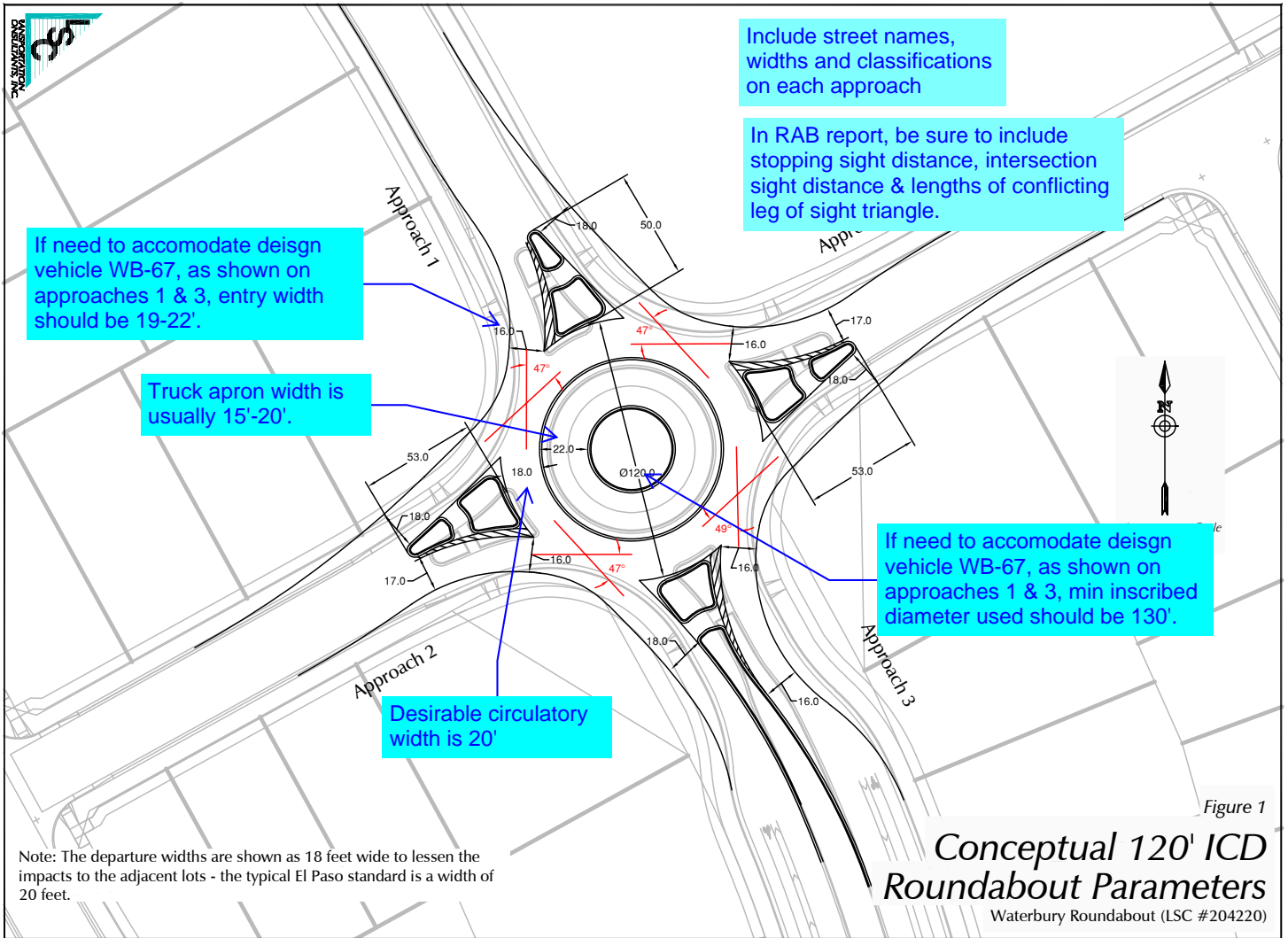
Truck apron width is usually 15'-20'.

Desirable circulatory width is 20'

If need to accommodate design vehicle WB-67, as shown on approaches 1 & 3, min inscribed diameter used should be 130'.

Note: The departure widths are shown as 18 feet wide to lessen the impacts to the adjacent lots - the typical El Paso standard is a width of 20 feet.

Figure 1
Conceptual 120' ICD Roundabout Parameters
Waterbury Roundabout (LSC #204220)



Author: jchodsdon Subject: Sticky Note Date: 7/20/2022 11:08:48 AM

LSC Response: Discussed the need for a more compact design. LSC will add the flowline dimension to the splitter island in addition to the 18' dimension.