Thomas Jefferson Planning District Commission
Charlottesville/Albemarle MPO

Charlottesville-Albemarle Metropolitan Planning Organization
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Memorandum

To: MPO Policy Board
From: Sandy Shackelford, Director of Planning & Transportation
Date: June 14, 2021
Reference: Smart Scale Round 5 – CTAC Discussion Summary

Purpose:

At their meeting in May, the Citizens Transportation Advisory Committee reviewed the list of SMART SCALE projects that were recommended for consideration by local government, VDOT, and CA-MPO staff. In addition to the projects identified by staff, one CTAC member proposed an alternative project and an additional consideration for one of the projects in the staff-identified list for additional consideration. The projects discussed here have undergone an initial review by local government, MPO, and VDOT staff, as well as being discussed at the CTAC meeting on May 19, 2021.

Background:

In addition to the list of projects that local government, CA-MPO, and VDOT staff developed for consideration in Round 5 of SMART SCALE, one of the members of CTAC also proposed an additional project to consider an alternative improvement to the Hydraulic Road/Route 29 intersection and requested that an alternative bridge design/location be considered as part of the Rivanna River Bike and Pedestrian Crossing.

The CTAC discussion of these alternative SMART SCALE projects can be viewed at the following link starting at the approximate time marker of 54:10: https://www.youtube.com/watch?v=8i3irZXAmhk.

CTAC Hydraulic Road/Route 29 Intersection Improvement:

Project Description:

The proposed project would create a grade-separated interchange ("flyover") to move traffic between the US 250 bypass and US 29. The entrance/exit points onto the ramp would be located on US 250 west of the interchange with US 29 and on US 29 just south of the intersection between US 29 and Seminole Court, utilizing the existing US 29 median to support the structure.

The project was proposed by CTAC member, Lee Kondor. Mr. Kondor's support for the project is based on his assessment that the additional 29 Solutions projects that are being considered for SMART SCALE Round 5 submissions are not sufficiently justified. He believes the traffic volumes and lack of access onto

Cedar Hill limits the effectiveness of the District Avenue roundabout and that the Hillsdale Drive extension to 250 will not appreciably augment the previously awarded SMART SCALE improvements.

In contrast, Mr. Kondor believes his proposal will alleviate congestion on US 29 at the intersections with Hydraulic Road and Angus Road and be a better use of his estimate of $50 million that he believes his suggested improvements would cost.

CTAC Comments:

This proposal was discussed at the CTAC meeting on May 19, 2021. Comments expressed by CTAC members are summarized below:

- Appreciation for the work Mr. Kondor put into developing the proposal.
- Concerns regarding the financial implications of pursuing this alternative intersection design considering the likely impacts to the Hydraulic/29 intersection improvements awarded in Round 4 and the loss of the Solutions 29 funding that was applied to that application.
- Concerns regarding the use of the 29 median to construct the proposed ramp and how that could limit future opportunities to potentially expand transit service along US 29.
- A desire to prioritize other projects that would support the development of multi-modal infrastructure.
- Concern that the proposed configuration would make pedestrian movements more challenging across US 29.
- Concerns regarding the safety of the ramp during adverse weather conditions.
- Concerns regarding the length of construction and impacts on local businesses.

Staff Comments:

Technical staff also conducted an initial review of the proposal that Mr. Kondor provided and have several additional points for consideration:

- The proposed project would have congestion relief benefits by removing through traffic from the section of Emmett Street from Hydraulic Road South.
- It is unlikely that this project is eligible for funding since improvements to the Hydraulic Road/US 29 intersection were recommended for funding in SMART SCALE Round 4. To pursue this project, the MPO would have to decline the previous award and forego the $18 million of Solutions 29 money that was allocated for congestion relief in the area prior to submitting this as an application. This application would replace the entirety of the previously awarded application, which includes the Hydraulic/29 intersection improvements, the Zan Road bike and pedestrian bridge, shared use paths along Hydraulic Road from Brandywine Drive to Michie Drive, and the roundabout at Hydraulic Road and Hillsdale Drive.
- The cost estimates have not been verified by VDOT staff, and it is possible that the estimated cost for the project would increase upon a VDOT review.

- The City of Charlottesville has extreme reservations about an elevated roadway/bridge system at this location within the City based on the initial costs as well as future maintenance, inspections, and eventual replacement expenses.
- A similar design was considered as part of the Solutions 29 Advisory Panel and was not recommended to move forward by the panel at the time that the final recommendations were developed.

CTAC Rivanna River Bicycle and Pedestrian Crossing:

Project Description:

This is an alternative configuration for consideration of a potential Rivanna River Bicycle and Pedestrian Crossing should this project be selected as one of the SMART SCALE Round 5 applications. As part of the feasibility study that was completed in 2020, two potential bridge locations and designs were identified by the consultants as feasible options.

Should the Policy Board select the Rivanna River Bicycle and Pedestrian Crossing as one of the projects they would like CA-MPO staff to pursue, a discussion of alternative design options, such as the one that is discussed here, could be considered as the final application is developed.

CTAC Comments:

There was general support from CTAC for considering an option that would connect to Old Mills Trail, but CTAC members also expressed their desire that bicycle and pedestrian connectivity be prioritized beyond potential flooding impacts since the bridge would likely not be utilized by pedestrians during flood conditions.

Staff Comments:

There are a number of technical considerations that would need to be evaluated to develop a final application. The number of piers, impacts to the park, access, and connection to existing facilities will need to be evaluated.

Recommendation:

No action is requested from the Policy Board at this time. CA-MPO staff will include the CTAC-proposed flyover concept to the list of potential projects for consideration by the Policy Board at their meeting on July 28, 2021. If there are any questions or comments, please contact Sandy Shackelford at sshackelford@tjpdc.org.

CTAC PROPOSAL

Intersection of US 29 and Hydraulic Road

The attached drawing set shows the concept for an elevated roadway consisting of one lane in each direction starting just south of the intersection of US 29 and Seminole Court and ending just east of the interchange between US 250 / US 29 and Barracks Road. The total length of the elevated roadway is 3163 feet. A conservative cost estimate follows:

Quantity	Description	Unit Cost	Total
38	Elevated roadway pier	$250,000	$9,500,000
23	Steel for 81-foot span (including cross-bracing)	$350,000	$8,050,000
8	Steel for 163-foot span trusses	$1,400,000	$11,200,000
117,030	Square foot of elevated roadway deck (labor & materials)	$100	$11,703,000
1	Median modifications	$3,000,000	$3,000,000
1	US 29 / Hydraulic Road intersection modifications	$1,000,000	$1,000,000
1	Traffic signal modifications	$1,000,000	$1,000,000
1	Sign modifications	$2,000,000	$2,000,000
1	Design and project management	$2,000,000	$2,000,000
Total:			$49,453,000

Because traffic flow on the elevated roadway is unimpeded by traffic signals it can have the same 55 MPH speed limit as the US 250 / US 29 expressway and can, therefore, carry most of the US 29 through traffic in both directions. Traffic volume at the US 29 and Hydraulic Road intersection is thereby drastically reduced. Advantages of this concept include minimal modifications to the existing US 29 and Hydraulic Road intersection and construction confined almost entirely to the existing medians with minimal disruption of current traffic patterns during construction.

Based upon data gathered at the intersection of US 29 and Hydraulic Road on Friday, August 21, 2020 between 3:15 PM and 3:30 PM looking at southbound US 29 traffic, the traffic light cycle for the intersection provides about 54 seconds of green light for the southbound US 29 traffic followed by a 6-second yellow light. During each of these less than 1 minute cycles an average of 24 vehicles passed through the intersection in each of the two right-hand lanes for a total of 48 vehicles per light cycle. The total light cycle is 2 minutes and 10 seconds long (130 seconds). That means that at maximum capacity, the intersection as it is today is capable of handling 1329 vehicles per hour in the two right-hand through lanes.

The proposed elevated roadway can handle 1800 vehicles per hour in each direction at the typical 2-second spacing, which is equivalent to an average annual daily traffic (AADT) volume of 36,000. According to the VTrans database, the AADT volume on US 29 south of the intersection with Hydraulic Road is 56,000. Consequently, the proposed elevated roadway would reduce the AADT volume on US 29 in the vicinity of Hydraulic Road to a much more manageable 20,000.

The Round 4 SMART SCALE proposal for improving the intersection of US 29 and Hydraulic Road, however, would, at a cost of $24.6 million, eliminate the left turns from Hydraulic Road onto US 29, which would increase the 54 seconds of green light for southbound US 29 traffic by just 12 seconds each 130-second light cycle. At best that would increase the capacity for US 29 southbound through traffic from 1329 vehicles per hour to 1625 vehicles per hour, which is equivalent to an AADT volume of

32,500. This obviously does little to reduce congestion on a roadway carrying an AADT volume of 56,000. Worse yet, the elimination of left turns from Hydraulic Road would create a significant inconvenience. In the case of westbound traffic on Hydraulic Road wanting to go south on Emmet Street, these vehicles would have to turn right onto Seminole Trail and make a U-turn at the signalized intersection of Seminole Trail and Seminole Court. In the case of eastbound traffic on Hydraulic Road wanting to go north on Seminole Trail, the idea presumably would be to have this traffic continue eastbound on Hydraulic Road and then go around the proposed roundabout at the intersection with Hillsdale Drive to head west on Hydraulic Road to turn right on Seminole Trail. There are a couple of problems with that idea. First, adding to the quantity of eastbound through traffic on Hydraulic Road at the intersection with US 29 will take a somewhat longer time for the traffic light to remain green for Hydraulic Road traffic during the 130-second cycle, which will significantly reduce the expected gain of 12 seconds for the US 29 through traffic. Second, the roundabout for the intersection of Hydraulic Road and Hillsdale Drive is problematic because it is too small for the multilane configuration and the AADT volume of 28,000 on Hydraulic Road.

With the proposed elevated roadway, some of the traffic that now turns left from southbound US 29 to reach US 250 eastbound via Hydraulic Road will now find it advantageous to continue south on US 29 to the interchange with US 250. Likewise for some of the westbound US 250 traffic that now uses Hydraulic Road to reach US 29 northbound. Consequently, Hydraulic Road will also be less congested during peak traffic times. Furthermore, with the intersection of US 29 and Hydraulic Road no longer being a choke point, grade-level pedestrian crosswalks would be feasible.

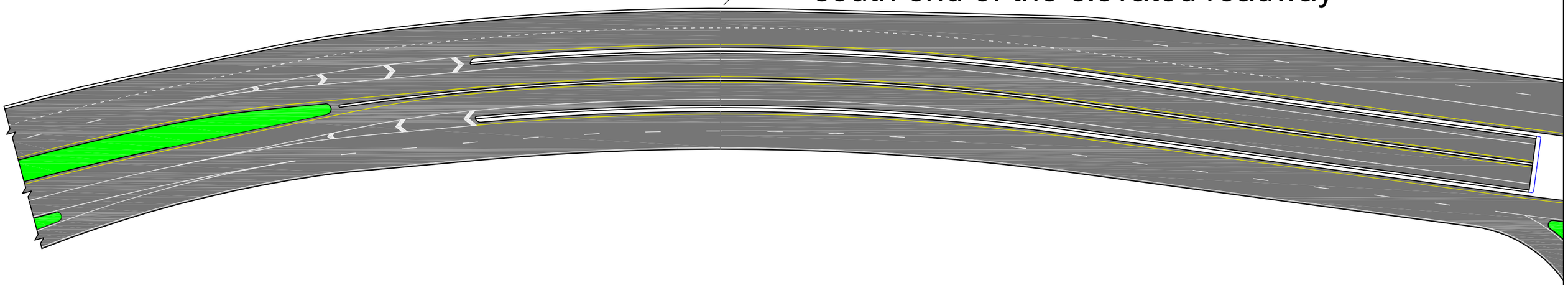
<u>Rivanna River Bicycle and Pedestrian Crossing</u>

The two attached drawings show an alternative proposal for the Rivanna River bicycle and pedestrian crossing to the two options VDOT presented. The first drawing is an overview of the proposed crossing, and the second shows one of the bridge spans in greater detail.

Unlike either of the two VDOT proposals, this proposal keeps the entire crossing above the 100-year flood level. It also has no grades greater than 5%, and it is less expensive than the VDOT Option 1 proposal, and, therefore, much less expensive than the Option 2 proposal. Furthermore, it is based upon a solid, detailed bridge span design, unlike the sketchy designs in the two VDOT proposals.

CTAC PROPOSAL - FLYOVER

US 250 & US 29 just east of the interchange with Barracks Rd, showing the ramp at the south end of the elevated roadway



Note: Elevated roadway supports shown in blue.

US 29 / Hydraulic Rd Intersection Improvements	
Lee Kondor Consulting Engineer	
Date: 08/15/2020	Scale: 50 feet =
Sheet 1 of 5 (elevated roadway deck hidden)	

Match Point to Sheet 2 (1)

CTAC PROPOSAL - FLYOVER

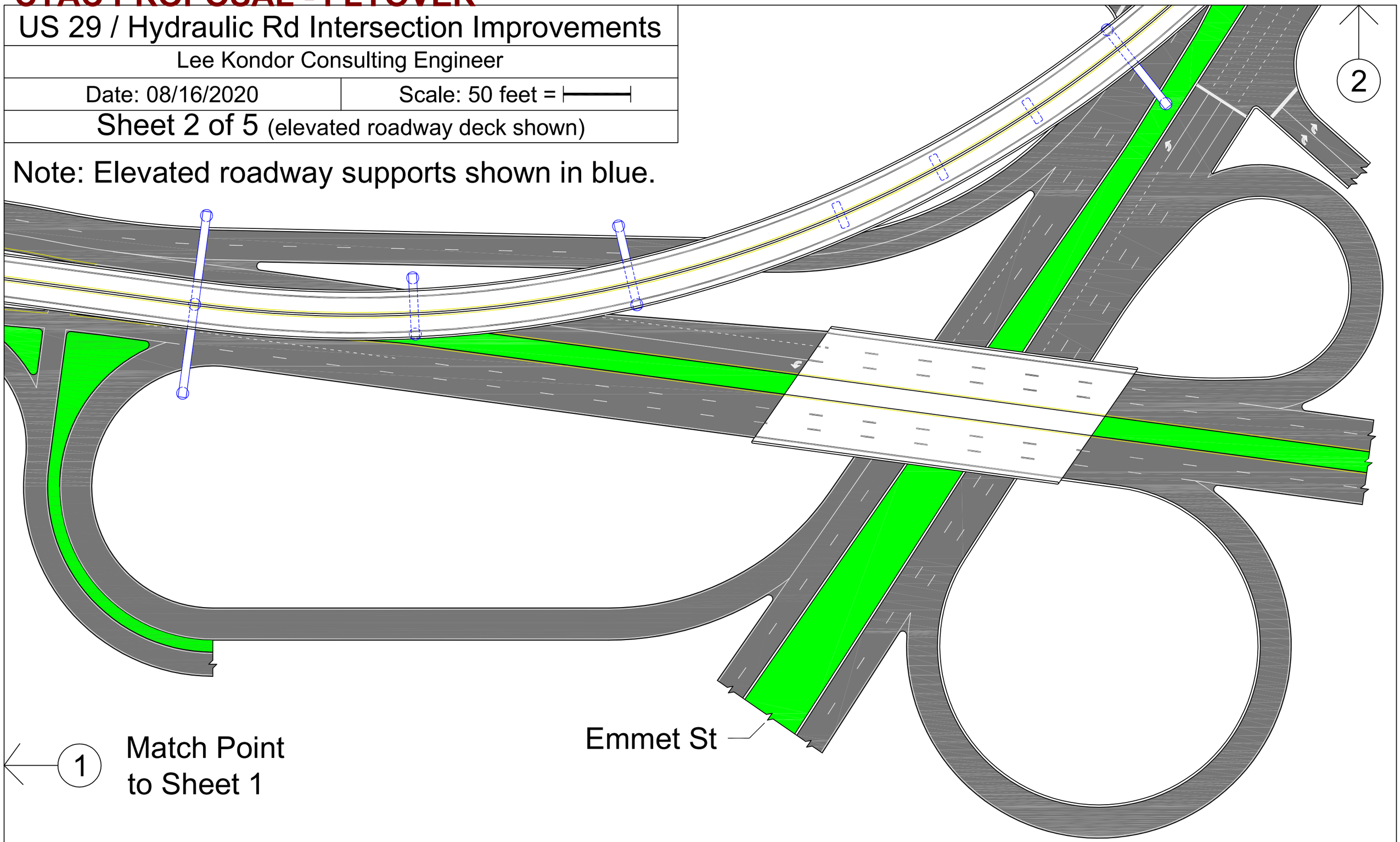
US 29 / Hydraulic Rd Intersection Improvements

Lee Kondor Consulting Engineer

Date: 08/16/2020 | Scale: 50 feet = ⊢——⊣

Sheet 2 of 5 (elevated roadway deck shown)

Note: Elevated roadway supports shown in blue.

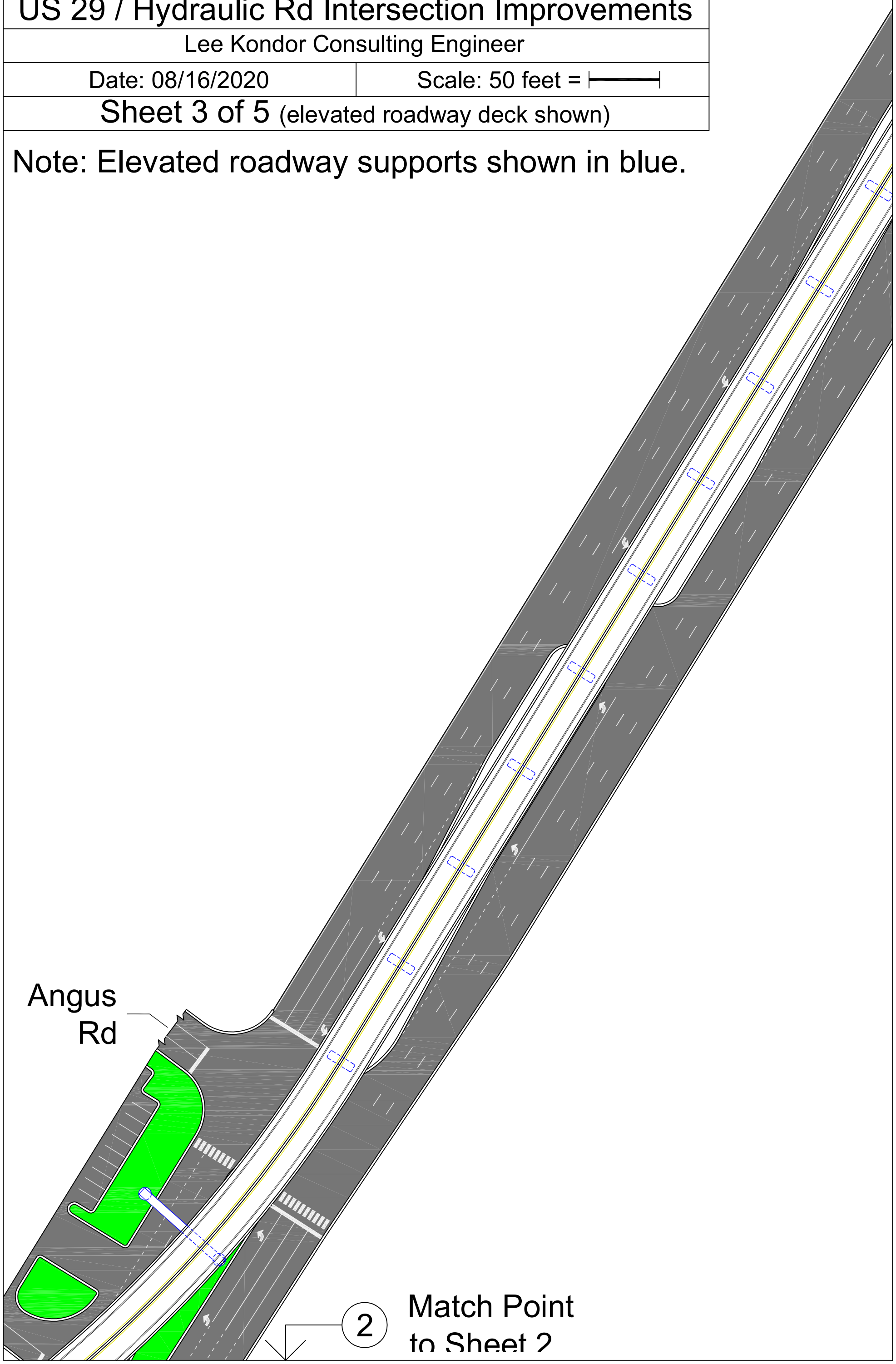


CTAC PROPOSAL - FLYOVER

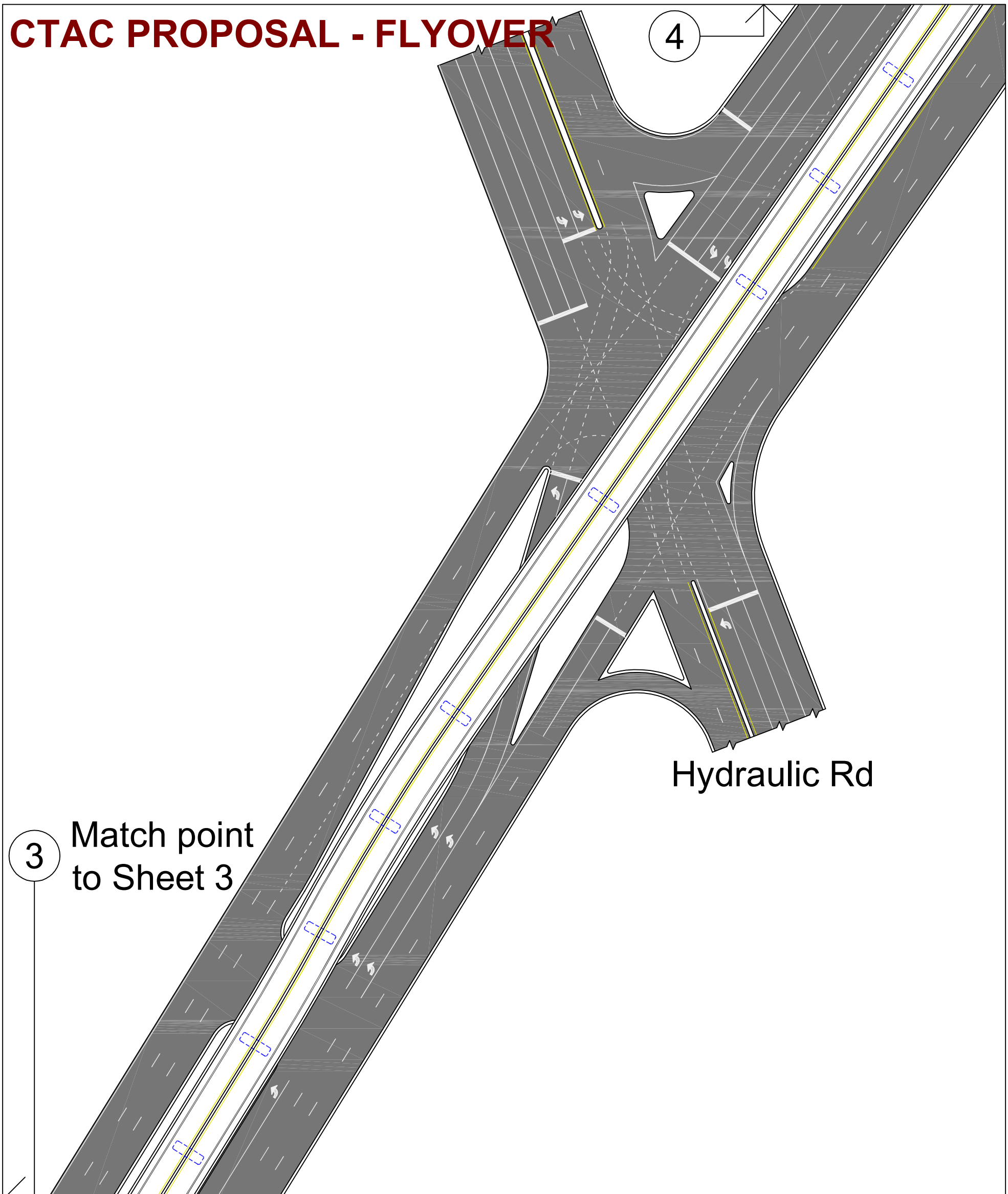
Match point to Sheet 4 (3)

US 29 / Hydraulic Rd Intersection Improvements	
Lee Kondor Consulting Engineer	
Date: 08/16/2020	Scale: 50 feet =
Sheet 3 of 5 (elevated roadway deck shown)	

Note: Elevated roadway supports shown in blue.



CTAC PROPOSAL - FLYOVER



Note: Elevated roadway supports shown in blue.

US 29 / Hydraulic Rd Intersection Improvements	
Lee Kondor Consulting Engineer	
Date: 08/17/2020	Scale: 50 feet =
Sheet 4 of 5 (elevated roadway deck shown)	

US 29 / Hydraulic Rd Intersection Improvements

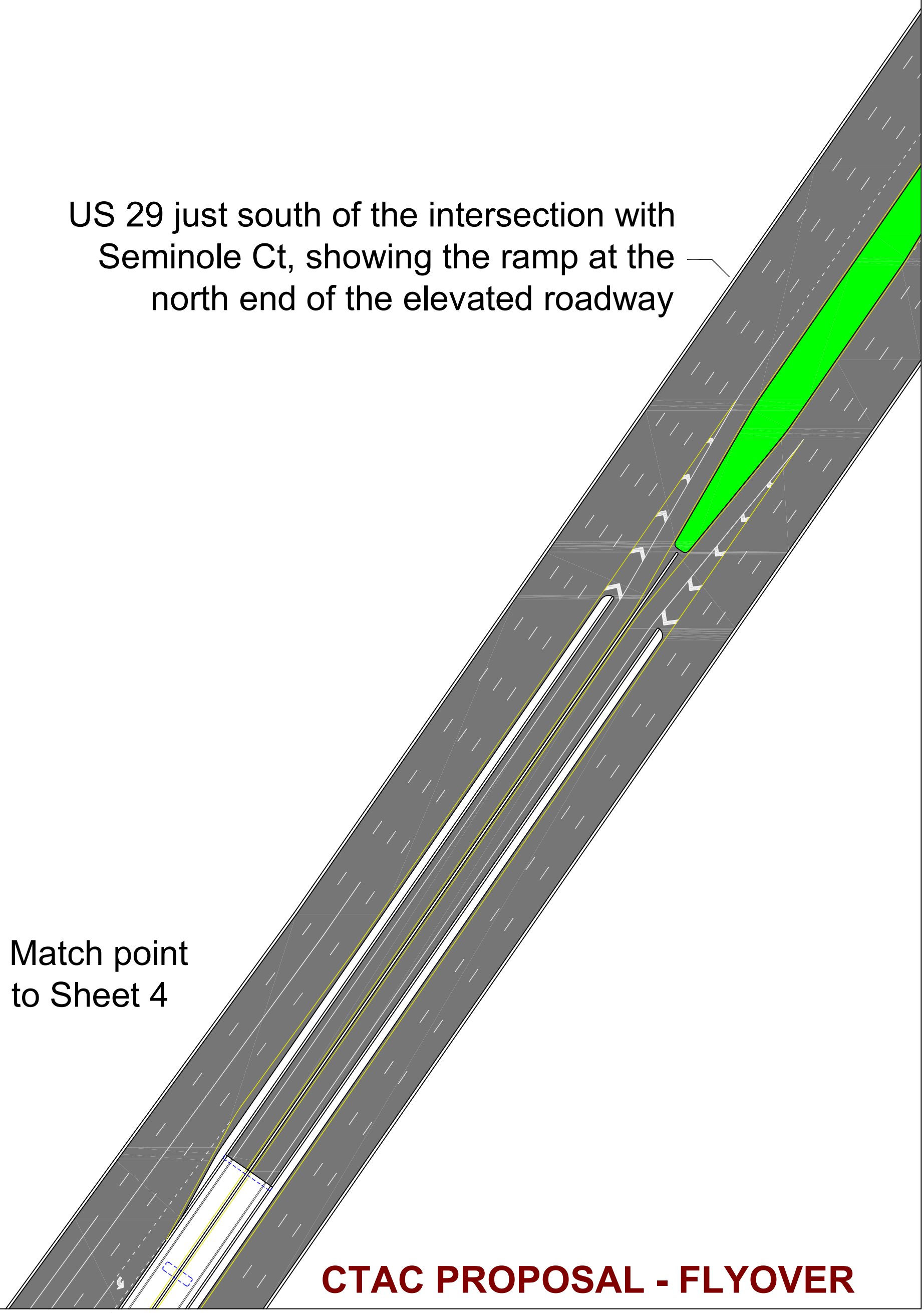
Lee Kondor Consulting Engineer

Date: 08/17/2020 | Scale: 50 feet =

Sheet 5 of 5 (elevated roadway deck shown)

Note: Elevated roadway supports shown in blue.

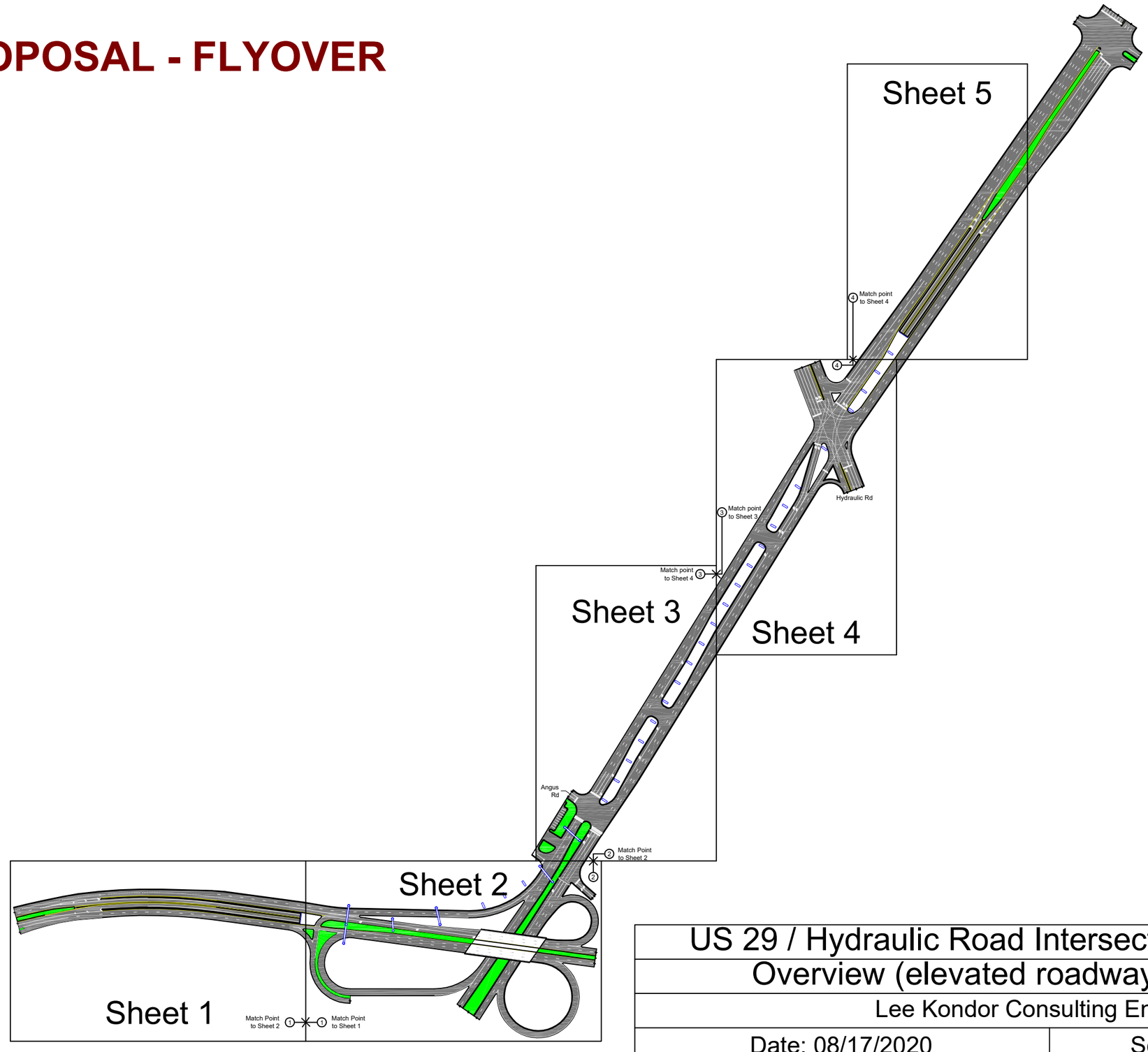
US 29 just south of the intersection with Seminole Ct, showing the ramp at the north end of the elevated roadway



4 Match point to Sheet 4

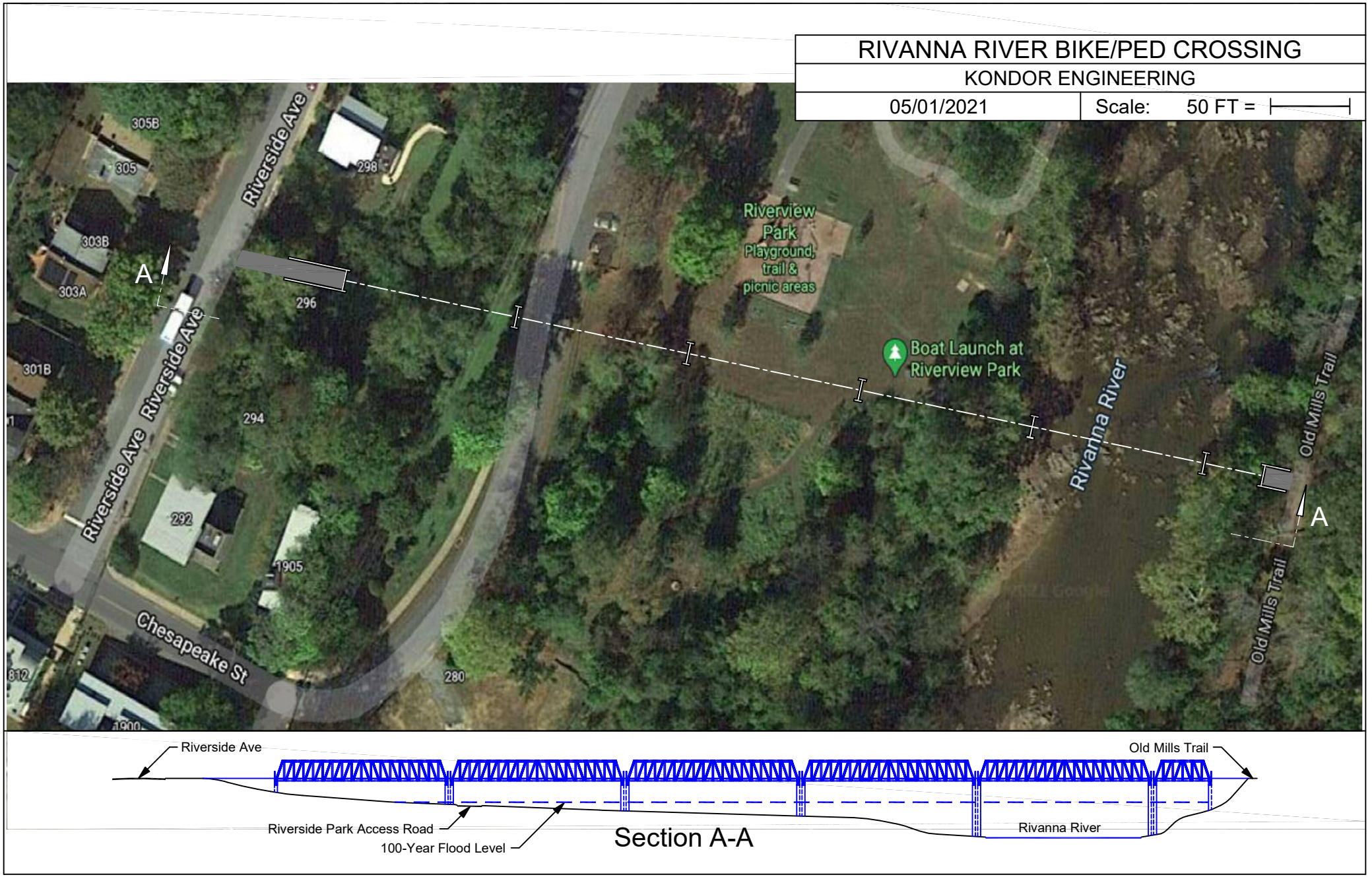
CTAC PROPOSAL - FLYOVER

CTAC PROPOSAL - FLYOVER



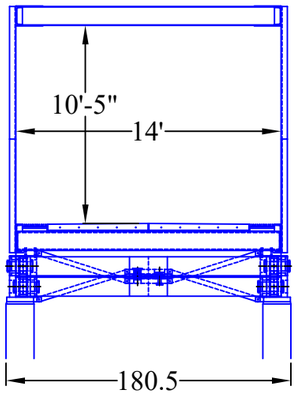
US 29 / Hydraulic Road Intersection Improvements	
Overview (elevated roadway deck hidden)	
Lee Kondor Consulting Engineer	
Date: 08/17/2020	Scale: 200 feet =

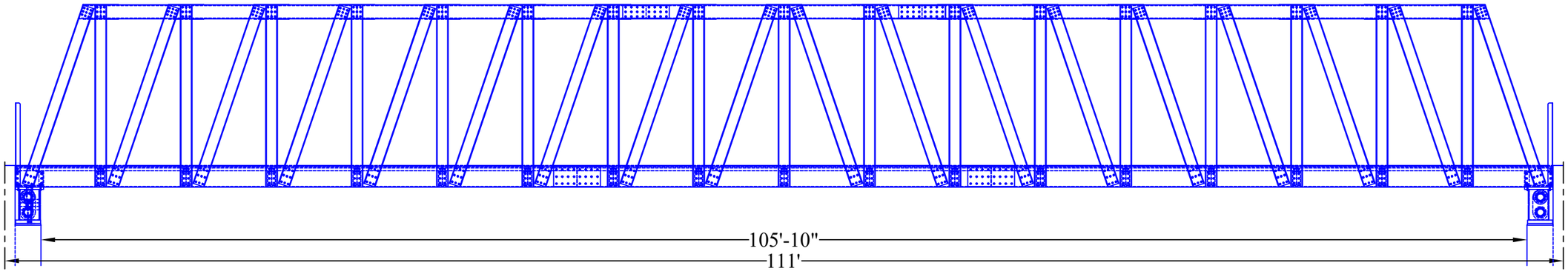
CTAC PROPOSAL - RIVANNA BRIDGE ALTERNATIVE



BRIDGE SPAN WEIGHT INCLUDING LIVE LOAD & EXCLUDING SUPPORTS

Deck Slab Concrete: 398 FT^3 x 145 LB/FT^3	57,710
Deck Slab 11 GA Stainless Steel Shell: 72" x 72.5" x 36 Pieces	6,577
Deck Slab Shell End Plate: 0.25" x 4.15" x 63.64" x 72 Pieces	1,387
Stainless Steel Grating Slat: 3/16" x 1.5" x 72.75" x 504 Pieces	3,008
Bottom Side Channels: MC18 x 45.8 x 232.2'	10,635
Bottom Cross-Beam: W12 x 31 x 14' x 17 Pieces	7.378
Bottom Cross-Channels and Top Side Channels: MC12 x 40 x 269.8'	10,792
Vertical Channels: MC10 x 33.6 x 925'	31,080
Top Cross-Beam: W12 x 16.5 x 266.7'	3,740
Top Gusset: 341 IN^2 x 3/8" x 68 Pieces	2,461
Live Load: 100 PSF x 1,168 FT^2	116,800
TOTAL:	251,568





CTAC PROPOSAL - RIVANNA BRIDGE ALTERNATIVE

RIVANNA RIVER BIKE/PED CROSSING		
KONDOR ENGINEERING		
Date: 05/01/2021	Scale: 1/8" = 1'-0"	BRIDGE ELEVATION