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March 4, 2015

City Council
City of Palo Alto
250 Hamilton Avenue
Palo Alto, CA 94301

Re:
Adobe Creek Pedestrian Bridge Design Clarifications

Dear Councilmembers:

A series of questions have been raised regarding our scheme following its selection by the design competition jury. There have also been modifications to the design proposed by the City's Commissions & Boards and members of the public to further improve the proposed project. These modifications are ones that we would certainly support should the City decide to incorporate them.

We very much appreciate the opportunity to share the thinking that has shaped our design and its benefits for the City. Please see the attached documents which sum up key clarifications, facts, and potential proposed modifications.

We look forward to sharing our design in person on March 16. If you have questions or concerns, please don't hesitate to reach out to us directly at carson@64north.com or 310 923 0813.

Sincerely,



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KEY CLARIFICATIONS

A number of concerns have been raised regarding our team's design. We appreciate this opportunity to share the thinking that shaped our design and its benefits for the City and the Baylands.

+ STRUCTURAL FEASIBILITY

A concern has been raised regarding the structural feasibility of our design, and that it is less robust than the other proposed solutions. The opposite is true. Steve Burrows, the sole engineer on the design jury, noted that the arch structure was the most deliverable of the three schemes. He further felt that it would not present “torsion and lateral problems” as a self-anchored suspension bridge would, which “means time, means cost, means a different visual impression” in order to realize the alternative proposed solutions.

+ CABLE SUPPORTS & HEIGHT IN THE BAYLANDS

A concern has been raised regarding the competition's desire for a solution that is not cable-stayed and minimizes height, specifically as it related to towers, in the Baylands. Our arch is in fact the only proposal that is not cable stayed, with no cables in the Baylands, with a maximum height of 18' in the Baylands, well under the prescribed 35'. Importantly, the design is the only proposal that avoids towers in the Baylands, eliminating roosts for raptors which prey on the endangered Salt Marsh Harvest Mouse and other related species.

+ COST

A concern has been raised regarding cost. We are confident that our structural solution represents the least possible risk as it relates to cost, and that the project can be delivered within the City's stated budget, as it is the most proven and least experimental of the proposed structures. Arch structures have consistently proven to be significantly less expensive than self-anchored suspension bridges, which are traditionally one of the most expensive bridge types (examples include the east span of the Bay Bridge and London's Millennium Bridge).

Furthermore, the thin deck of the arch allows us to reduce the overall length of the bridge by an additional 100', further reducing overall costs. Finally, maintenance and inspection costs will similarly be straightforward and low, with all elements exposed to view, easily reached, and able to be maintained or replaced as necessary, an important consideration when considering the economics of the total life cycle cost of the bridge.

+ PERMITTING

We are likewise confident that the bridge can be easily permitted by CalTrans, building on our success at Cupertino's Mary Avenue Bridge, where we were asked to create an alternative to a bridge designed by others that had come in doubly over budget and successfully permitted it in only 6 weeks. In addition, our solution is the only one that does not place additional fill in the Baylands, allowing us to minimize environmental impact and successfully permit the restoration of this critical habitat.

+ BIRD SAFETY

A final, very important concern that has been raised is that of bird safety. This is a concern that shaped the design and integration of artwork on the bridge from its outset. Please see the attached letter from our team member and biologist at it relates to successfully addressing bird safety.

KEY FACTS

+ A LIGHT, GRACEFUL STRUCTURE CELEBRATING PALO ALTO'S CONNECTION TO THE BAYLANDS

Living in Palo Alto, we felt that the defining characteristic of the Baylands is its vast, open space. We have sought to create a structural solution that celebrates this new connection in the most light, airy manner possible, with arch ribs and deck only 18" deep, as well as integrating details like the required missile barrier over the highway into the structure, removing the need for unsightly supports and creating a profound, direct connection between pedestrians and cyclists as they pass along the bridge and the Baylands beyond.

+ SEPARATING USERS SHARING THE PUBLIC REALM

Working with local bicycle advocates during the design process, we recognized that the bridge will be used by a wide diversity of user types, including children and the elderly. As such we have separated cyclists and pedestrians, both through material finish and physical separation, allowing each group to safely and comfortably use the bridge; turning radii were also set to control descent speeds.

+ SAFETY

Current national best practices recommend against placing bridge structure in interstate medians due to the real and significant risk of collisions and compromised bridge integrity. This is important not only in the center median but in between Highway 101 and Bayshore, which is more proximate to truck traffic. Placing structures in these outer medians also limits future planning changes to US 101 and necessitates months of freeway closures for construction. Similarly, there is an existing 30" gas main directly adjacent to the Bay Trail whose relocation would be a very significant cost, potentially more than the bridge's total budget. The arch scheme is the only competition entry that avoids all of these conflicts.

+ AMENITIES

The bridge encourages use of this important connection to the baylands through incorporating key amenities including bathrooms, a bicycle repair station, public plaza, and interpretive boardwalk.

+ A SINGLE NIGHT OF TRAFFIC DISRUPTION

Using an innovative, proven method of bridge erection, Self-Propelled Modular Transports, that our team has used successfully for Caltrain and in Utah, the bridge can be constructed offsite and rolled into place, requiring only a single nighttime closure and eliminating traffic disruption and the risks posed by nearby high voltage lines to construction methods that rely on a crane.

+ CONSERVATION & THE FUTURE

The project is a demonstration of a more multifunctional, forward-thinking approach to integrating infrastructure and conservation. It leverages its small footprint for larger-scale effects, such as filtering stormwater not just from the bridge but also from East Bayshore, as well as recapturing greywater. A new vernal pond restores the natural character of the Baylands, and becomes a home for a more diverse range of ecologies. Geotextile walls minimize the bridge's footprint in the Baylands and are home to pollinator species, drawing the natural character of the Bay into the City west of Highway 101. Finally, the design importantly plans for future sea level rise, anticipating additional habitat area for endangered species as well as insuring that the design is as vital and successful in 50 and 100 years as it is when it is built.

March 4, 2015

City Council, City of Palo Alto
250 Hamilton Ave, Palo Alto, CA 94301

Re: Adobe Creek Pedestrian Bridge Design and Bird Deterrence

This letter addresses existing and proposed bird deterrence elements of a proposed pedestrian/bicycle bridge at the Adobe Creek Overcrossing project site in Palo Alto. The proposed bridge would cross Highway 101 adjacent to an area of open space and historic baylands. While the issue of bird collisions with buildings has received substantial attention in recent years, minimal to no research exists that document bird strikes on bridges or bridge cables. We have thus considered the project in consultation with national experts in bird collision and collision deterrents.

The proposed bridge design is a through arch bridge with suspension cables that support the bridge deck. This design has been successfully utilized with no known bird strikes in areas near bird habitat and migratory routes including Happy Hollow Park over Coyote Creek in San Jose, the Berkeley Pedestrian Bridge over Interstate 80, and over Lake Champlain. The proposed arch is located directly over 14 lanes of extremely busy traffic on Highway 101. According to several of the national avian experts we consulted, birds by nature will avoid flying parallel to and directly above the freeway at an elevation low enough to strike the bridge. This information was corroborated by engineers with the City of Berkeley, whose Berkeley Pedestrian Bridge is a similarly designed through arch bridge more directly adjacent to the Bay and wetland nesting areas and that bird strikes are not an issue.

Several elements were incorporated into the preliminary design to mitigate the risk of bird collisions. These elements are based on proven examples in other applications (e.g., power lines and viticulture) that have been proven effective and include:

- Lighting is a bird attractant and poses the greatest danger for bird collisions. Bird-appropriate lighting was chosen for the bridge. This includes no large, upward pointing lights which may attract or confuse passing birds. Instead lights are horizontal or down-ward facing which reduces their attractive nature to birds.
- Five-inch diameter steel discs are to be mounted onto the suspension cables, similar to flight diverters that are used for power lines and reflective tape used in viticulture. They will sway freely and reflect sunlight and headlights alerting birds to the presence of the bridge.

To further our goal of making the bridge even more bird-friendly we reached out to several national experts in the bird collision field, including Dr. Dan Klem, Professor of Biology, and Sarkis Acopian Professor of Ornithology and Conservation Biology in the Department of Biology at Muhlenberg College, author of more than 30 published studies on the subject; Kara Donohue, Senior Biologist at Southern California Edison, an expert on birds and cables, biologist Angela Kocielek of the Western Transportation Institute, and Professor Amanda Rodewall, Director of Conservation Science for the Cornell University Lab of Ornithology, the center of avian research in the United States.

Each of these national experts independently confirmed the efficacy and appropriateness of our approach. They further suggested the following design changes which can be incorporated to improve mitigation of bird collisions further, which we are happy to adopt:

- Making the cables darker to increase their contrast to allow birds to see them more easily.
- Increasing the density of reflective discs on the cables to make the wires appear more solid and less penetrable.
- Increasing the diameter of the cables to at least 1 inch or greater to increase their visibility.

In conclusion, while the likelihood of any birds interacting with the bridge in a potentially harmful manner (i.e., flying low, parallel to and just over the freeway) is very low, the proposed design features will reduce the potential for bird strikes even further. Please do not hesitate to contact me if you have questions or require additional information.

Sincerely,



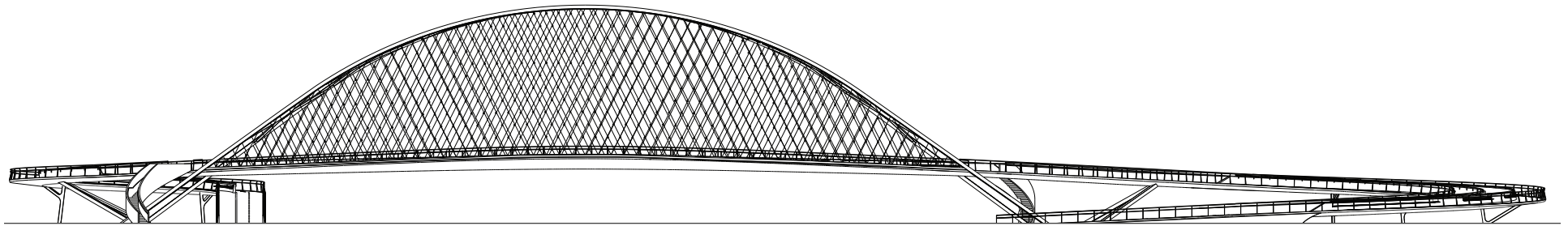
Geoff Smick
President/Ecologist

CONFLUENCE : ADOBE CREEK PEDESTRIAN & CYCLIST BRIDGE

POTENTIAL MODIFICATIONS:

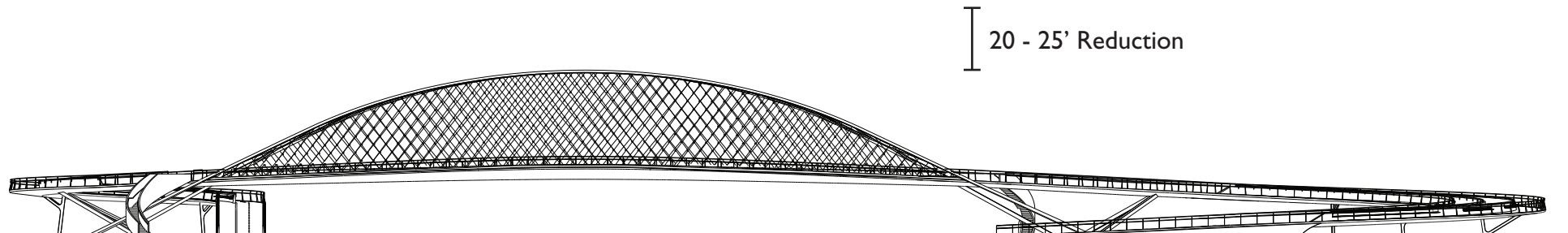
+ PROPOSED HEIGHT MODIFICATION OF 20 - 25'

In discussing our competition proposal with the City of Palo Alto Boards & Commissions as well as with community members, we felt that the overall height of the bridge, 56' above the bridge deck and 75' above the freeway, might be reduced to create a more modest overall profile, while maintaining the efficient, minimal 18" profiles throughout for both deck and arch ribs and ensuring there are no unsafe supports in the center of Highway 101 nor between Highway 101 and Bayshore. Following additional structural analysis, the overall height of the bridge can be reduced 20-25'.



BEFORE / South Elevation

0' 10' 20' 50'



AFTER / South Elevation

0' 10' 20' 50'

CONFLUENCE : ADOBE CREEK PEDESTRIAN & CYCLIST BRIDGE

+ PROPOSED HEIGHT MODIFICATION OF 20 - 25'



BEFORE / Perspective from South

CONFLUENCE : ADOBE CREEK PEDESTRIAN & CYCLIST BRIDGE

+ PROPOSED HEIGHT MODIFICATION OF 20 - 25'



AFTER / Perspective from South

+ NEW DIRECT CONNECTION TO SOUTHBOUND WEST BAYSHORE BICYCLE PATH

One additional concern that was raised by many constituencies, including PABAC, was that the primary commuter pathway for bicyclists is southbound along West Bayshore and that all three proposed concepts did not allow for bicycles to move onto the bridge with a minimum of effort. Each of the proposed schemes currently accomodates these users with a shortcut stair. However, because our scheme has already been designed with a unique “loop over” configuration to the west of Highway 101, it is possible to add a second ramp from the north which merges with the existing configuration. This solution would require additional negotiation with Google, who owns the building adjacent, as the ramp would further extend onto their property. However, the proposed ramp would not block any vehicular traffic nor pedestrian access to the building.

