



Legislation Details (With Text)

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Title: Department of Transportation recommending the Board:
1) Adopt and authorize the Chair to sign Resolution 215-2019, thereby amending the FY 2019-20 Authorized Personnel Allocation Resolution for the Department of Transportation, deleting one vacant 1.0 FTE Associate Land Surveyor position;
2) Approve the addition of one (1) unmanned aerial vehicle to the Fiscal Year 2019-20 Fixed Asset List totaling \$34,000;
3) Approve additional funds to cover the costs of training, computer equipment and software, and other accessories for the unmanned aerial vehicle in the amount of \$19,400, to the Fiscal Year 2019-20 organization code 3620200; and
4) Approve and authorize the Chair to sign a budget transfer adjusting the budget for Fiscal Year 2019-20 to allow for the purchase of the unmanned aerial vehicle and related expenses (4/5 vote required).

FUNDING: Road Fund.

Sponsors:

Indexes:

Code sections:

Attachments: 1. A - Budget Transfer, 2. B - Drone Phantom 4 RTK, 3. C - Approved Resolution Route Sheet, 4. D - Resolution, 5. Executed Resolution 215-2019, 6. Public Comment Rcvd 12-10-19 BOS 12-10-19, 7. Public Comment Rcvd 12-9-19 BOS 12-10-19, 8. Executed Budget Transfer

Date	Ver.	Action By	Action	Result
12/10/2019	1	Board of Supervisors	Approved	Pass

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FUNDING: Road Fund.

DISCUSSION / BACKGROUND

The Department of Transportation (Transportation), Fairlane Engineering's Survey Unit (Survey) is requesting authorization to add one (1) item to the Fixed Asset list, allocate \$53,400 to the Fiscal Year (FY) 2019-20 Adopted budget, and purchase an unmanned aerial vehicle (UAV/drone) and associated items for use in performing aerial surveys of project sites to develop topographic (topo)

maps. Transportation further proposes to delete one 1.0 FTE vacant Associate Land Surveyor allocation due to retirement of incumbent.

In the planning phase, the UAV/drone could be used on every new project to get a topo base map and orthophoto of the site. This would eliminate about 60% of the ground topo shots taken by a field crew, thereby reducing staffing needs and the related reduction in the vacant Land Surveyor position. Ground survey and staking would still need to be completed by Survey staff for control points and any features unidentifiable from photos such as corner monuments, culverts, utilities, etc. During the construction phase, as-built surveys will be able to more accurately track material quantities and identify discrepancies.

The UAV/drone data will be processed using Pix4d photogrammetry software for photo stitching, point cloud classification, and then digital terrain model creation for use in Autodesk Recap and Virtual Surveyor. Recap (reality capture) is a point cloud processing program that is compatible with other Autodesk programs that Transportation currently uses. Virtual Surveyor will be used to create breaklines and contours to develop a base map for use by design staff in Autodesk Civil3d. These software programs require high speed computers to process the large amount of point cloud data created. The workstation specifications included with the computer equipment are recommended by CAD Masters, Inc. of Sacramento. Additional training and certifications to use the UAV/drone are required and will be utilized by the Survey staff.

UAV/drone surveying capabilities will have time savings versus traditional survey methods according to Aerotas (UAV mapping consultant). This time savings will enable Survey staff to take multiple UAV/drone flights through various stages of planning, design, and construction. One of the big advantages of drones is that the flight patterns are autonomous and can be repeated over the same area at different times. This can be utilized to get data at different stages of construction to track material quantities. It can also be used to more easily obtain data after construction for as-built plans.

The FY 2019/20 Budget will need to be adjusted as follows:

Budgeted appropriations in the Transportation Engineering budget need to be increased in Fixed Assets-Equipment by \$18,000, Fixed Assets-Computer System Equipment by \$16,000, Minor Computer Equipment by \$1,900, Software by \$6,500, and Staff Development by \$11,000. This is offset by a decrease in Appropriations for Contingency in the amount of \$53,400 in the Transportation General Department budget.

ALTERNATIVES

The Board could choose to not approve the additional fixed asset and associated items as proposed, although this would leave Transportation providing survey data in the traditional time it takes now and not provide additional data as the new asset can.

PRIOR BOARD ACTION

N/A

OTHER DEPARTMENT / AGENCY INVOLVEMENT

County Counsel has reviewed and approved the Resolution.

CAO RECOMMENDATION / COMMENTS

It is recommended that the Board approve this item.

FINANCIAL IMPACT

The proposed fixed asset and additional costs are funded by Road Fund. The total cost for the fixed asset, training and certifications, insurance, software, and computer upgrades is \$50,401. The ongoing yearly cost for maintenance, training, insurance, and software is approximately \$7,800. The ongoing cost will be included with the Department's budget request in future fiscal years. The salary savings for the Associate Land Surveyor position is \$168,928. There is no General Fund cost associated with this agenda item.

CLERK OF THE BOARD FOLLOW UP ACTIONS

- 1) The Clerk of the Board will obtain the Chair's signature on the original Resolution and budget transfer documents.
- 2) The Clerk of the Board will forward the budget transfer to the Auditor/Controller for processing.
- 3) The Clerk of the Board will forward one (1) copy of the signed budget transfer to Transportation, for further processing of approved fixed asset purchase.
- 4) The Clerk of the Board will provide one (1) certified copy of the signed Resolution to the Human Resources Department, attention to Katie Lee.

STRATEGIC PLAN COMPONENT

Good Governance, Infrastructure

CONTACT

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Department of Transportation