

TO: Regional Transportation Commission
FROM: Karena Pushnik, Senior Transportation Planner
RE: Highway 1/17 Interchange Merge Lanes Non-Landscaped Soundwall

RECOMMENDATIONS:

Staff recommends that the Regional Transportation Commission:

1. Approve one design for the non-landscaped soundwall on top of the non-landscaped section of soundwall (approximately 350-feet) for the Highway 1/17 Merge Lanes Project; and
 2. Accept information from Caltrans regarding the feasibility of including a planter box on the non-landscaped soundwall.
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BACKGROUND

At the February 2005 Regional Transportation Commission (RTC) meeting, Commissioners heard a presentation by Caltrans staff about the Highway 1/17 Interchange Merge Lanes Project. Included was information about the project location, purpose/need, funding, schedule, features and the public awareness campaign.

DISCUSSION

Included in the February 2005 presentation about the Highway 1/17 Interchange Merge Lanes Project was information regarding soundwalls and landscaping, including a section of soundwall that is approximately 350-feet in length which can not be landscaped near the Emeline and Carbonera creeks. After considering and rejecting two representational designs, the RTC requested that Caltrans return with an abstract, non-representational design using the same colors as the other sections of soundwall. The attached designs are examples of other soundwalls in the state (Attachment 1). Staff recommends that the RTC select one of these designs in order to complete the final design phase of the project. All of the attached designs would have similar costs and none would pose difficulties for the Caltrans maintenance division with regard to graffiti removal.

In addition, the RTC requested that Caltrans evaluate whether it would be possible to include a planter box at the top of the non-landscaped soundwall to offer vegetative relief. Bryan Parker, Landscape Architect for Caltrans District 5, believes that the planter box option is not a feasible alternative for horticultural, constructability, maintenance, aesthetic, contract administration and functionality standpoints. His email comments are attached (Attachment 2).

SUMMARY

Staff recommends that the RTC decide on one design for the non-landscaped section of soundwall from the Highway 1/17 Interchange Merge Lanes project and accept information from Caltrans about the feasibility of including planter boxes on the top of this section of soundwall.

Attachments:

1. Abstract soundwall samples
2. Email correspondence with Caltrans Staff regarding Planter Box feasibility

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Attachment 2

**Email from Bryan Parker, Landscape Architect for Caltrans District 5
February 18, 2005**

It was suggested at the last SCCRTC meeting that if Caltrans cannot plant vines at the base of a soundwall, perhaps we could plant them at the top of the wall and get the same result (covering the wall with foliage). The proposal was to construct a planter box along the top of two sections of masonry block soundwall and install an automated sprinkler system to irrigate vines that would then grow down the wall surface. The soundwalls in question cannot be planted by conventional means because they're positioned on top of two retaining walls and the Emeline Avenue bridge. The commission asked Caltrans to study this proposal and estimate the cost for implementing it.

After discussion with several colleagues, it is my opinion that the planter box concept is not a feasible project alternative for the reasons outlined below:

The planter box is not feasible from a horticultural standpoint because the plants would not have adequate root space and their growth would probably be severely stunted, resulting in little or no wall coverage. Vines on this project are being planted on both sides of soundwalls at 8-foot centers. In a situation like the one proposed, they would need to be planted on 4-foot centers so they could be trained to grow down both sides of the wall; at that density the plants would require almost constant watering due to root competition combined with the evaporation rate of a fully exposed, perched planter box. Even with constant watering, the vines would probably never reach maturity or develop a healthy growth habit. Plants grown in containers like this also never become self-sustaining without irrigation, which is usually Caltrans' goal with its highway planting efforts.

This alternative is not feasible from a constructability standpoint because there is no commercially available device I'm aware of to affix a large planter to the top of a concrete masonry block wall and ensure seismic stability. In the event of an earthquake, the planter may fall and result in serious damage. Since nothing like this has been constructed before, our structural engineers do not have information like the load-bearing and anchoring requirements for the combination planter/soundwall/retaining wall facility; this technical design criteria is obviously essential for sound construction. Given enough time I'm sure our engineers could come up with a design, but it would not conform to any kind of FHWA/AASHTO standards and it may not be approved for funding when it goes before the California Transportation Commission.

The wall-top planter box is not feasible from a maintenance standpoint because young plants require a lot of care (watering, weeding, fertilizing, mulching, etc.) and these plants would be 25 feet above the ground on the outside of the wall. Even if a 'cherry picker' lift were used to allow workers to access the plants, the truck would have to work from the freeway side of the wall resulting in frequent lane closures and serious traffic impacts. The plants also would not be visible to passing landscape maintenance workers and botanical problems may not be apparent until plants began to fail, at which point replacement planting would be very difficult due to the root density in the planter.

Esthetically, a planter large enough to accommodate vines would be vastly out of scale with the rest of the wall creating a top heavy, unbalanced appearance. The concrete masonry block soundwalls on this project will be 8-inches wide in cross section; the planters would probably have to be at least 24-inches wide. Also, these 350-foot long sections of wall would be visually inconsistent with and not complementary to other soundwalls adjacent to it. At some point pipes and electrical conduit would have to be vertically attached to the surface of the retaining wall/soundwall to serve the valves and sprinklers in the planter, adding another element of potential ugliness.

From a contract administration standpoint, contractors would be unfamiliar with construction of this type and its inclusion with the project plans may result in cost estimating and bidding difficulties. Problems would continue when the project got to construction since workers and inspectors would also be unfamiliar with how to build it. The planter itself would probably require custom fabrication, adding significantly to the cost and complexity of this project element.

From a functional standpoint, vines are generally grown on highway soundwalls to deter graffiti and to improve the appearance of the roadsides for motorists. If the plants are growing from the top down (especially if they don't grow vigorously) it would take a long time for foliage to reach a level where it would block taggers or be visible from an automobile driver's viewpoint.

Due to the preponderance of problematic issues listed above and the lack of historical cost data, I cannot provide an accurate estimate for constructing a soundwall/planter box facility like the one described. If, after considering the information presented in this memo, the Commission feels like the planter/wall concept merits additional study, let me know.