## ATTACHMENT B: TYPICAL CROSS SECTIONS

NOTE
NOTE
FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS,
FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS,
2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT


BOLLINGER CANYON Rd NB LOOP ON-RAMP A" LINE AT STATION 720+75-730+00


4th PA\&ED SUBMITTAL
NOT FOR CONSTRUCTION
JANUARY 2024


BOLLINGER CANYON Rd NB ON-RAMP
'A" LINE AT STATION 721+00-738+50


BOLLINGER CANYON Rd
NB LOOP ON-RAMP UNDER BRIDGE
"A" LINE AT STATION 721+00-722+25
TYPICAL CROSS SECTIONS
SCALE: NO SCALE



OLYMPIC BIvd
NB ON-RAMP "A" LINE AT STATION 1311+00-1324+00

ATTACHMENT C: LAYOUTS \& SUPERELEVATION DIAGRAMS


NOTE:
NOTE:
. FOR GENERAL NOTES, LEGEND AND Abbreviations,
. FOR GENERAL NOTES, LEGEND AND Abbreviations,



LAYOUT
NOT FOR CONSTRUCTION
JANUARY 2024

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NOTE:
1. FOR GENERAL NOTES, LEGEND AND AbbREVIATIONS,
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2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGH OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CITY OF DUBLIN
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- FOR GENERAL NoteS, LEGEND AND Abbreviations,
- FOR GENERAL NoteS, LEGEND AND Abbreviations,

2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGH OF WAY ENGINEERING AT THE DISTRICT OFFICE.

R/W
PM R21.6
PM R21.7



















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NOTE
- For general notes, legend and abbreviations,
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2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGH OF WAY ENGINEERING AT THE DISTRICT OFFICE.

3. For accurate right of way data, contact
RIGHT OF WAY ENGINEERING at The district office.


TOWN OF DANVILLE





TOWN OF DANVILLE
NOTE
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. FOR GENERAL NOTES, LEGEND AND ABBREviationS,
. FOR GENERAL NOTES, LEGEND AND ABBREviationS,
2. For accurate righ of way data, contact
RIGHT of way Engineering at the district office.

PM R7
TOWN OF DANVILLE

Prod mid-aueue DETECTOR

LAYOUT


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NOTE:
1. For General notes, legend and abbreviations,
SEE SHEET \(L-1\).
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2. For Accurate right of way datac contact ofic.


TOWN OF DANVILLE














LAYOUT














ATTACHMENT E: ELECTRICAL DETAIL SHEETS





MODEL 342 LX CONTROLLER CABINET LAYOUT





ATTACHMENT F:
TIRTL BARRIER DESIGNS











## ATTACHMENT G: DRAINAGE SHEETS





## Attachment I - Disturbed Soil Area and Impervious Surface Area Exhibits





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NOTE:
1. FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS,
1. For general notes, legend and abbreviations,
SEE SHEET L-1.
```

2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
3. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.


CITY OF DUBLIN

## LEGEND

NET NEW IMPERVIIOUS (NNI)
EPLACED impervious surface (ris)
ISTUREED SOLL AREA (OSA)
Existing R/w
SWDR LAYOUT
3rd PA\&ED SUBMITTAL NOT FOR CONSTRUCTION
SEPTEMBER 2023



```
NOTE:
1. FOR GENERAL NOTES, LEGEND AND Abbreviations,
```

2. For accurate right of way data, contact
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

R/W


PM R0. 3
PM R0.4
PM R0.5

CITY OF SAN RAMON
sWDR LAYOUT





```
NOTE:
1. For general notes, legend and abbreviations,
SEE SHETT L-1.
```

2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.


CITY OF SAN RAMON











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NOTE:
1. FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS,
```

2. For accurate right of way data, contact
RIGHT OF WAY ENGINEERING at the district office.


TOWN OF DANVILLE

SWDR LAYOUT








```
NOTE
1. FOR GENERAL NOTES, LEGEND AND AbBREVIATIONS,
```

2. For accurate right of way data, contact
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.


LEGEND
NET NEW IMPERVIOUS (NNI)
REPLACED IMPERVIIOUS SURFACE (RIS)
REPLACED IIPPEVVIOUS SURFAC
DISTURBED SOIL AREA (DSA)
D SUBMITTAL
$\begin{aligned} & \text { 3rd } \text { PA\&ED } \\ & \text { NOT FOR CONSTRUCTION } \\ & \text { SEPTEMBER 2023 }\end{aligned}$
SWDR LAYOUT


```
NOTE:
1. FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS,
```

2. FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.


TOWN OF DANVILLE

SWDR LAYOUT



















ATTACHMENT I:
BOLLINGER CANYON ADVANCED PLANNING STUDY

## 1 BACKGROUND INFORMATION

### 1.1 VICINITY MAP

Figure 1 - Vicinity Map


Figure 2 - Location Detail

### 1.2 PROJECT DESCRIPTION

The Contra Costa Transportation Authority (CCTA), in cooperation with the California Department of Transportation (Caltrans) District 4 (D4), and the Federal Highway Administration (FHWA) proposes to address congestion on Interstate 680 (I-680) and improve mobility in Contra Costa County.

I-680 is a major facility within Contra Costa County and carries international, interstate, interregional and intraregional travel. This area is projected to experience substantial growth for goods movement and passenger vehicle traffic. Installation of coordinated adaptive ramp metering (CARM) and mainline intelligent transportation systems (ITS) would alleviate existing deficiencies, accommodate projected growth, and enhance the overall regional traffic flow by improving operations to accommodate regional traffic demand.

The Innovate 680 CARM project (the Project) limits are proposed on I-680 from Dublin Blvd to N Main Street including the following cities: Dublin, San Ramon, and Walnut Creek; and the unincorporated areas of Danville and Alamo; limits are proposed on SR 24 from El Curtola Boulevard to I-680. The segments of I-680 and SR 24 within the project limits are currently designated as urban. The primary land use for adjacent areas are residential and commercial.

There is currently a Caltrans State Highway Operation and Protection Program (SHOPP) project (EA 1Q720K) proposing ramp metering improvements within the defined project limits on the I-680. The improvements after the completion of the SHOPP ramp metering project are being used as the existing condition in the No-Build Alternative for the purposes of this Environmental Analysis.

### 1.2.1 Description of Work

The 04-1Q720K project, known as Caltrans SHOPP Ramp Metering Project, proposes to install a fiberoptic cable communication trunk line in the corridor, install/upgrade a traffic operations (TOS) system, and install/upgrade ramp metering (RM) elements in the corridor, including ramp widenings in Contra Costa County. Vehicle detection equipment would be installed or upgraded at each entrance ramp, exit ramp, and between each interchange on the mainline. Under this supplemental project, additional real-time information on traffic conditions on I-680 would be collected using the Infra-Red Traffic Logger (TIRTL). The deployment of CARM operations on the I-680 corridor between the Dublin Boulevard and North Main Street overcrossings would require 62 northbound TIRTL sites. Utility relocation is not anticipated, as no conflicts with existing utilities have been identified, though there may be intermittent disruption of services during construction.

## 2 PROPOSED STRUCTURE

The report addresses a retaining wall proposed to retain cut embankment. Based on roadway geometrics, right-of-way constraints, and grading requirements, a retaining wall is required at the following location:

- Summary of the Proposed Earth Retaining Systems (ERS)

| ERS ID No. | ERS <br> Type | Begin Station. <br> or PM | End Station. or <br> PM | Length (feet) | Max. Design <br> Height (feet) | Notes |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| RW 721 | Ground <br> Anchor | $10+00$ | $11+92.77$ | 192.77 | 17.5 |  |

The following design alternatives were considered for the new retaining wall at Abutment 5 for the Bollinger Canyon OC:

1. Cast in Place (CIP), Type I retaining walls
2. Ground Anchor retaining system
3. Solider/Sheet Piles

The retaining wall will be placed under the existing bridge to provide for on-ramp widening. The finished grade at the face of the wall will be below the bottom of the footing at Abutment 5. Excavating and backfilling the wall as required to build a CIP type I wall or solider/sheet piles wall is not feasible. The restricted vertical clearance under the bridge does not allow enough space to drive sheet piles. For this reason, a top-down construction by using a ground anchor retaining wall is recommended at this location.

## Recommended Alternative

A ground anchor wall is the recommended structure type in this location. Ground anchor walls will be constructed underneath bridge structures adjacent to Abutment 5.

### 2.1 STRUCTURE TYPES CONSIDERED SELECTION CRITERIA

### 2.1.1 Right-of-Way Impacts

Under this criterion, an evaluation was made to determine whether the wall:

- Lies completely within the R/W
- Requires a temporary construction easement (TCE) beyond the proposed R/W
- Impacts on adjacent property

| RW No. | Permanent R/W <br> Needed | TCE Needed | Adjacent Property <br> Impacts |
| :---: | :---: | :---: | :---: |
| RW 721 | No | No | None |

### 2.1.2 Geotechnical/Constructability Issues

The following site-specific geotechnical design issues were considered under this criterion:

- $P G A=0.72 \mathrm{~g}$
- Drainage - the backfill will be free-draining. Between ground anchors assemblies, geocomposite drain panels will be installed with weep holes installed along the base of the wall.
- Groundwater levels are well below the bottom of the wall and will not be an issue.
- Potential of liquefaction is considered very low.


### 2.1.3 Construction

Above the wall are the following bridge structures:
Bollinger Canyon OC, Br No. 28-224

Ground anchors under bridges will be oriented to avoid conflicts with the existing bridge foundations. The wall will be in close proximity to Abut 5 of the bridge; there is approximately one 1 foot calculated clearance. There are two as-built battered piles. Those battered piles due their weight may have been constructed flatter than 3:1 slope shown on the as-built plans. Constructing the wall close these battered piles could potentially cause loss of some skin friction of these piles.

To mitigate these potential conflicts, it is recommended that PS\&E team do the following:

- Create notch detail(s) to bypass the conflict. The detail(s) of wall in those areas may have to use a special steel reinforcement layout. The special reinforcement will act as a bridge and redistribute the stresses elsewhere from the notch to maintain the wall design structural capacity. However, the detail(s) will not be included in the construction document. It will be placed in the RE Pending file in case it is needed if a conflict arises. The details need to be reviewed by Caltrans during the PS\&E process.
- The foundation report will also need to address the possible skin friction loss due to the loss of soil surrounding the pile.

The location of the proposed ground anchors might be close to existing piles. It is recommended the PS\&E design team to design the ground anchors to a range of tributary areas. The spacing of the ground anchors on the plans should be shown as range min to max. Moreover, note(s) may need to be added to the plans so the contractor can adjust the ground anchors spacing (within $\mathrm{min} / \mathrm{max}$ ) to avoid any conflict with existing piles.

### 2.1.4 Construction Cost

The retaining wall estimate construction cost: \$900,000


Appendix III PRELIMINARY GENERAL PLAN


