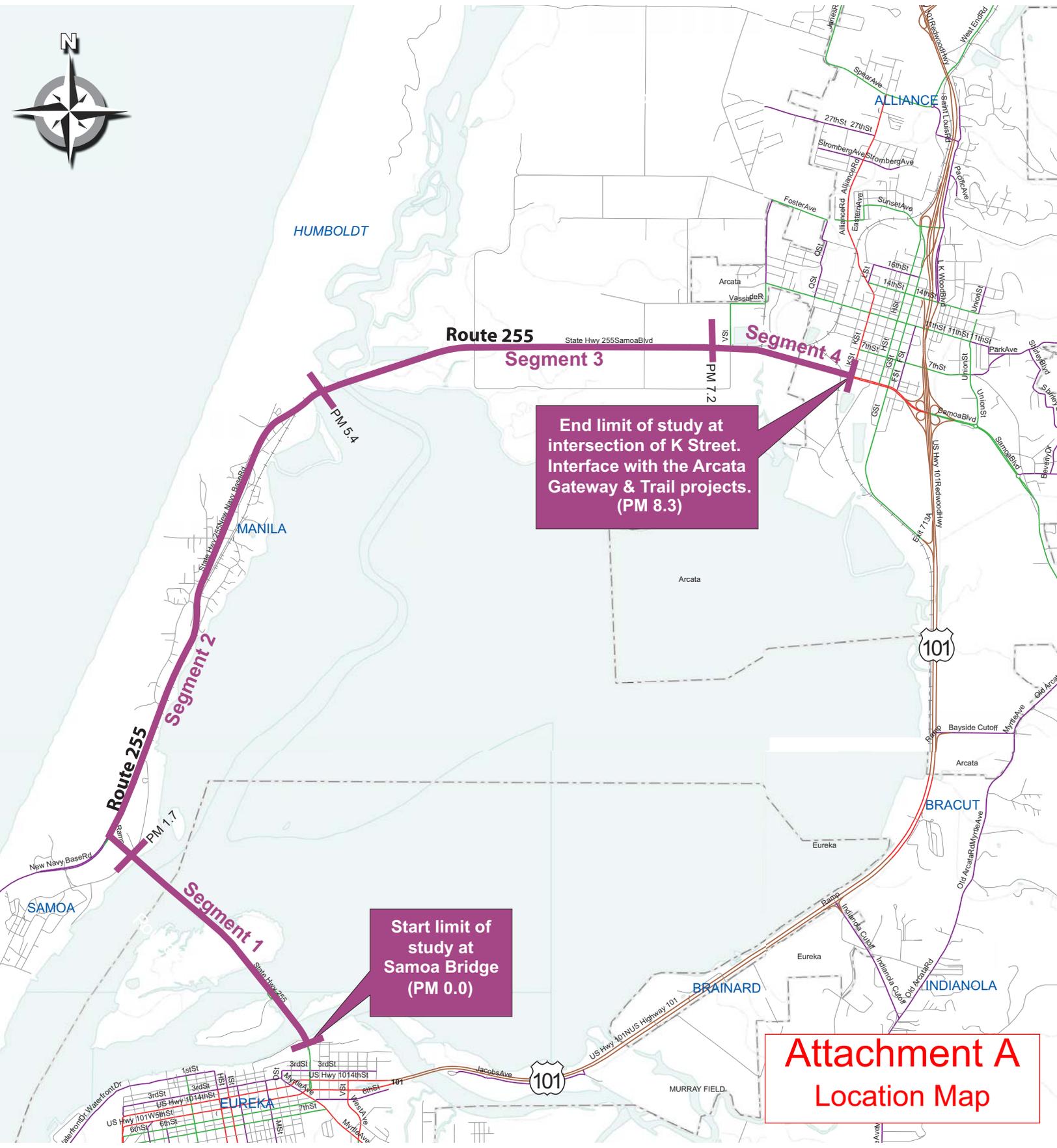


## **XI. Attachments**

- A. Location Map
- B. Initial Manila Transportation Enhancements
- C. Future Manila Transportation Enhancements
- D. Segment 1 Non-motorized Traffic Improvements
- E. Segment 2 Non-motorized Traffic Improvements
- F. Segment 3 Non-motorized Traffic Improvements
- G. Segment 4 Non-motorized Traffic Improvements
- H. Cost Estimates
- I. Public Comments
- J. Preliminary Environmental Analysis Report
- K. References
- L. Traffic Counts
- M. Advance Planning Study
- N. Score Sheets
- O. Non-motorized Traffic Improvements Fact Sheets
- P. Initial Manila Transportation Enhancements Fact Sheets
- Q. Future Manila Transportation Enhancements Fact Sheets
- R. Collision Data

# **ATTACHMENT A**

## **LOCATION MAP**



Start limit of study at Samoa Bridge (PM 0.0)

End limit of study at intersection of K Street. Interface with the Arcata Gateway & Trail projects. (PM 8.3)

**Attachment A**  
**Location Map**

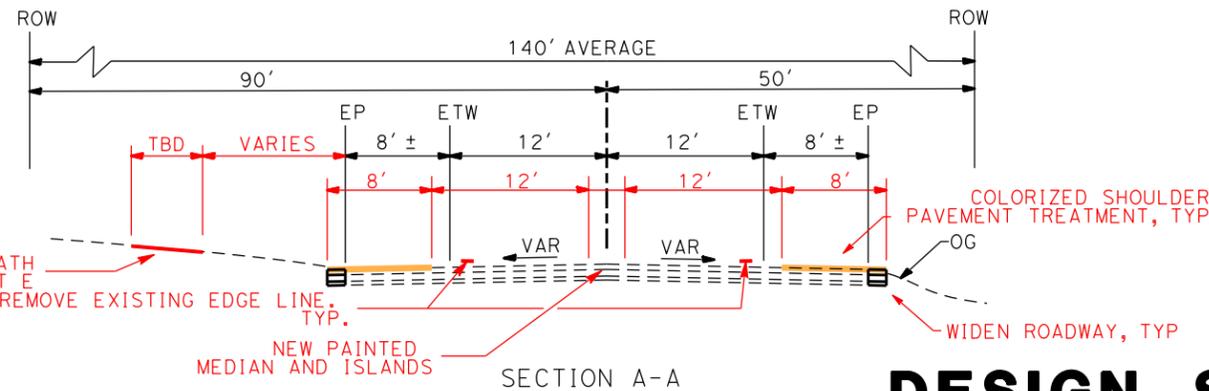
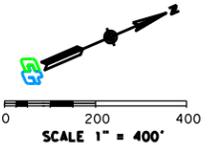
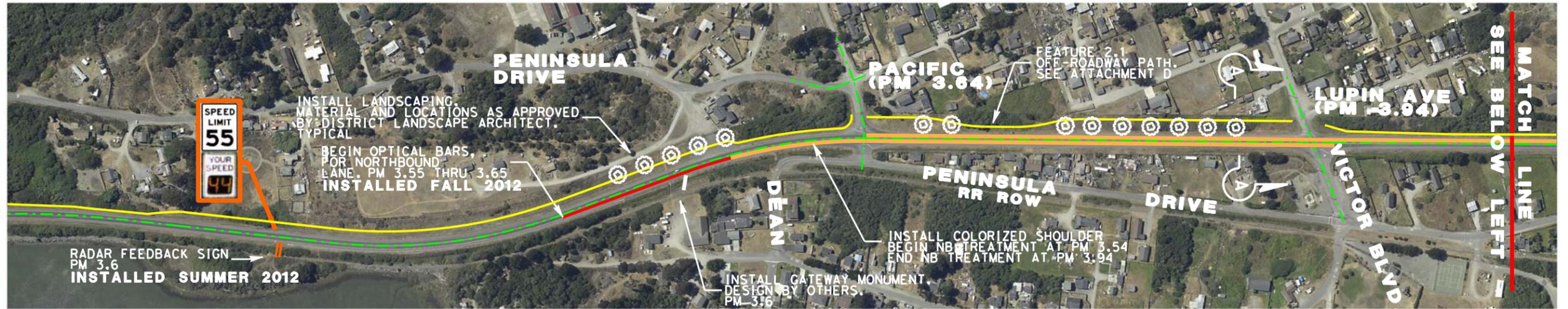
# **ATTACHMENT B**

## **INITIAL MANILA TRANSPORTATION ENHANCEMENTS**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	HUM	255	0.0/8.3	-	-

**DESIGN STUDY ONLY**

# SEGMENT 2 INITIAL MANILA TRANSPORTATION ENHANCEMENTS



**DESIGN STUDY ONLY**

**SR 255  
ENGINEERED FEASIBILITY STUDY  
DECEMBER 2012  
ATTACHMENT B**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**

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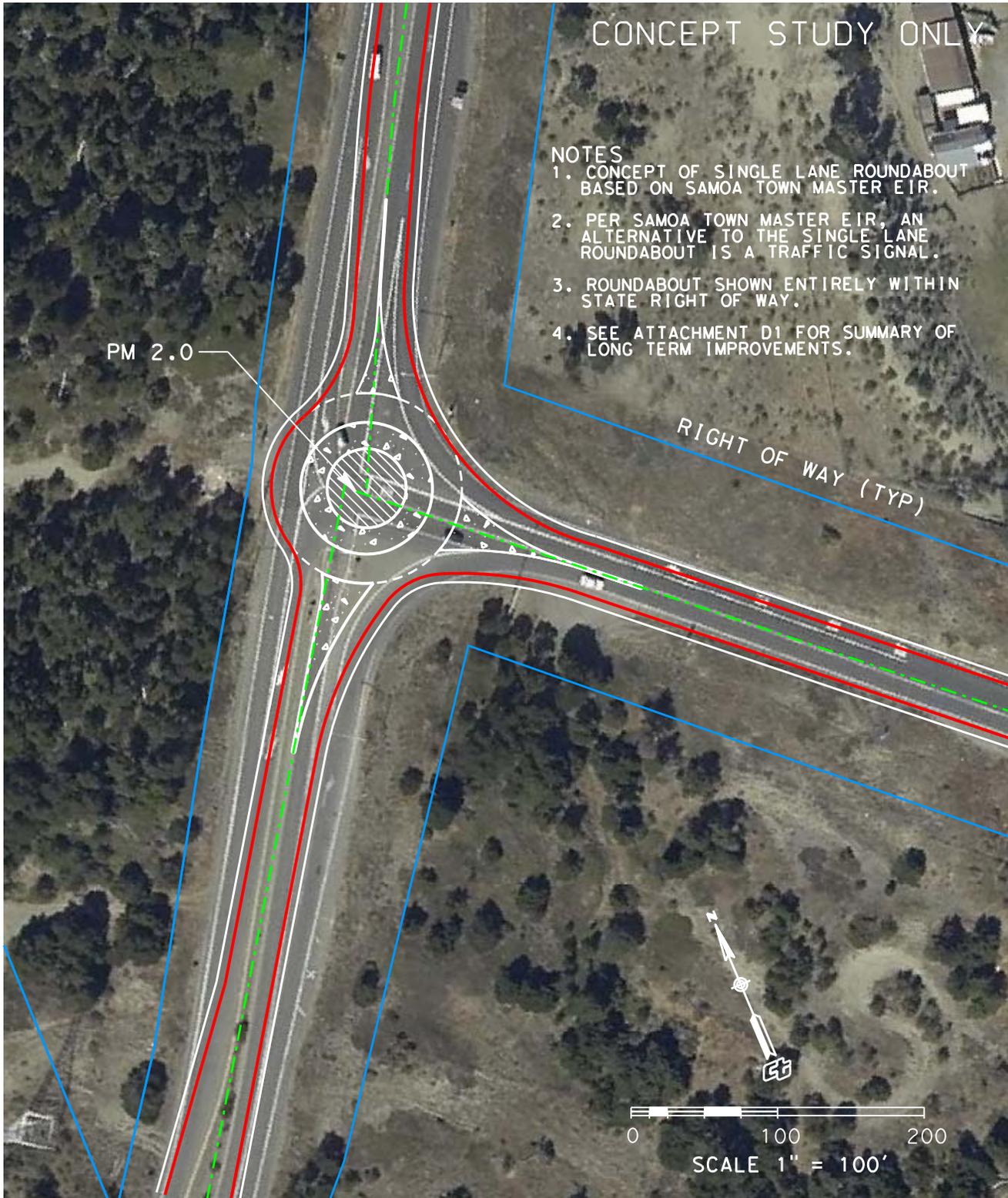
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

# **ATTACHMENT C**

## **FUTURE MANILA TRANSPORTATION ENHANCEMENTS**

# SEGMENT 2 FUTURE MANILA TRANSPORTATION ENHANCEMENTS

HUM 255 NB TO MANILA



HUM 255 SB TO EUREKA.  
850' TO SAMOA CHANNEL BRIDGE ABUTMENT

NEW NAVY BASE ROAD  
TO SAMOA

**SR 255**  
**ENGINEERED FEASIBILITY STUDY**  
APRIL 2012  
**ATTACHMENT C1**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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**DESIGN STUDY ONLY**

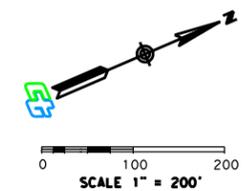
**SEGMENT 2  
FUTURE  
MANILA TRANSPORTATION ENHANCEMENTS  
TWO ROUNDABOUT OPTION**

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DATE

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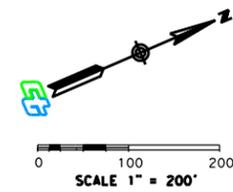
**DESIGN STUDY ONLY**

**SR 255  
ENGINEERED FEASIBILITY STUDY  
DECEMBER 2012  
ATTACHMENT C2**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	HUM	255	0.0/8.3	-	-

**DESIGN STUDY ONLY**

# SEGMENT 2 FUTURE MANILA TRANSPORTATION ENHANCEMENTS SIGNAL WITH CROSSWALK OPTION



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 REVISOR BY  
 DATE REVISED

**DESIGN STUDY ONLY**

**SR 255**  
**ENGINEERED FEASIBILITY STUDY**  
 DECEMBER 2012  
**ATTACHMENT C3**

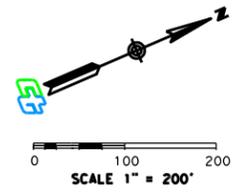
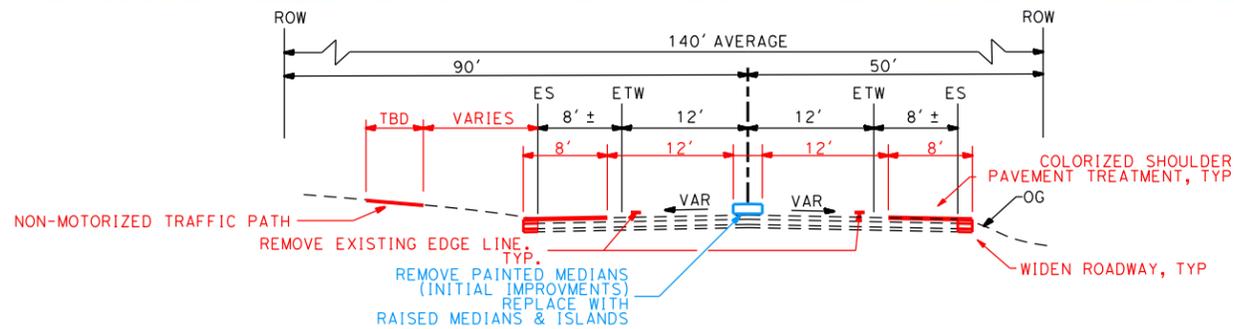


Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	HUM	255	0.0/8.3	-	-

**DESIGN STUDY ONLY**

# SEGMENT 2 FUTURE MANILA TRANSPORTATION ENHANCEMENTS MEDIAN AND CROSSWALK OPTION

REVISOR: [ ]  
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 SUPERVISING ENGINEER: [ ]  
 DEPARTMENT OF TRANSPORTATION  
 STATE OF CALIFORNIA  
 Caltrans



SECTION A-A  
INITIAL IMPROVEMENTS SHOWN IN RED  
FUTURE IMPROVEMENTS IN BLUE

**DESIGN STUDY ONLY**

**SR 255**  
**ENGINEERED FEASIBILITY STUDY**  
 DECEMBER 2012  
**ATTACHMENT C4**

# **ATTACHMENT D**

## **SEGMENT 1 NON-MOTORIZED TRAFFIC IMPROVEMENTS**

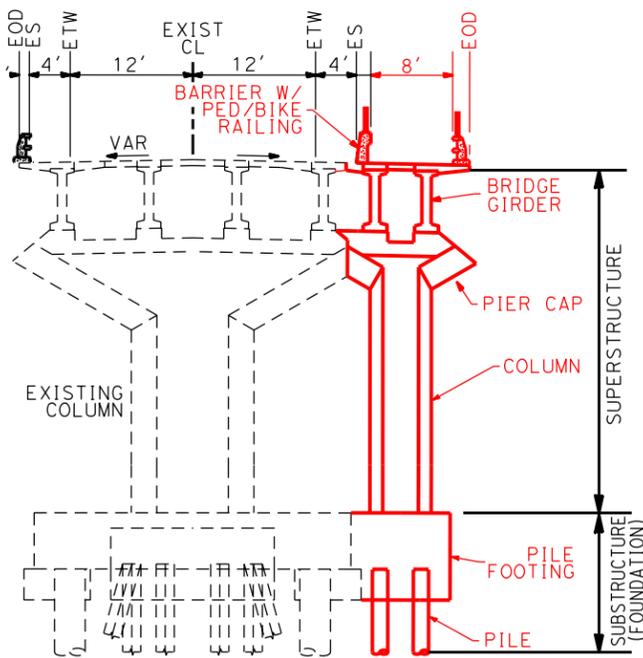
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# DESIGN STUDY ONLY

## SEGMENT 1 NON-MOTORIZED TRAFFIC IMPROVEMENTS

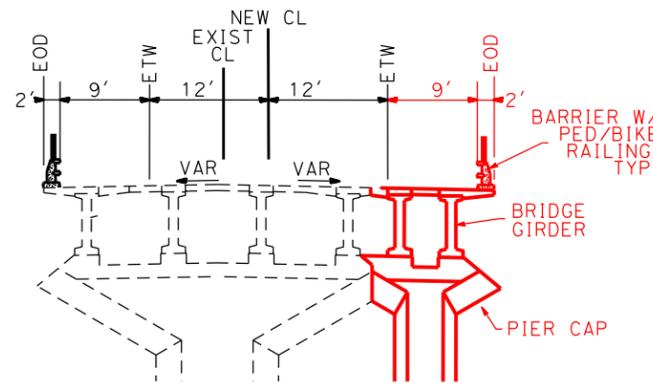


DECK WIDENING WITH NEW FOUNDATIONS



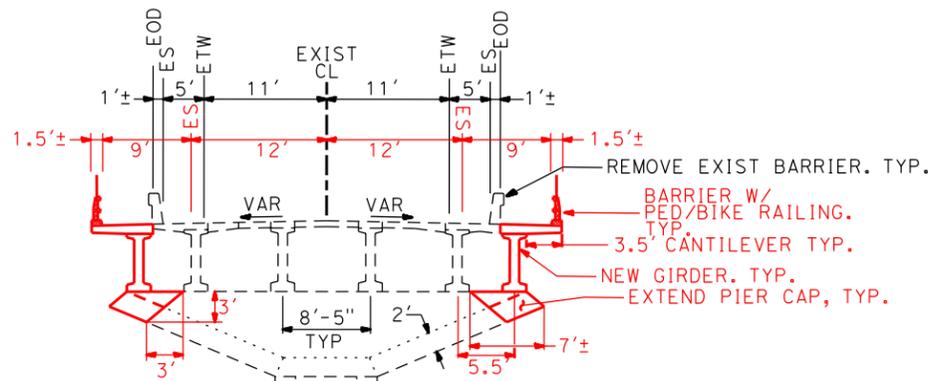
**FEATURE 1.1  
CLASS I BIKEWAY**

DECK WIDENING WITH NEW FOUNDATIONS



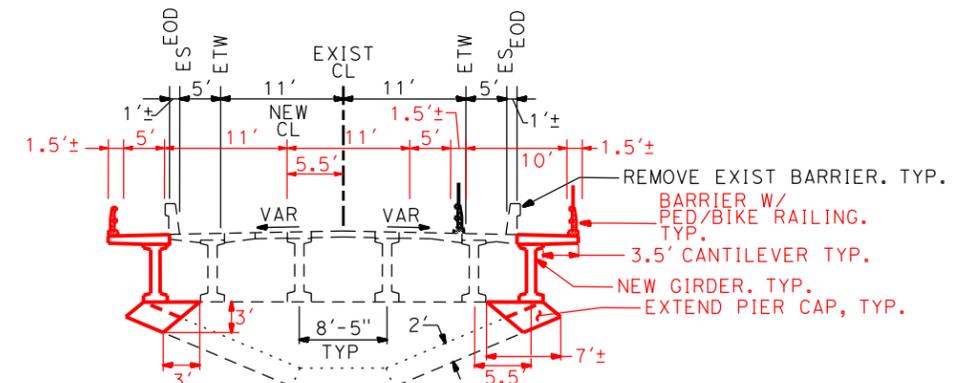
**FEATURE 1.2  
CLASS II or III BIKEWAY**

DECK WIDENING WITH PIER CAP EXTENSIONS



**FEATURE 1.4  
CLASS II or III BIKEWAY**

DECK WIDENING WITH PIER CAP EXTENSIONS



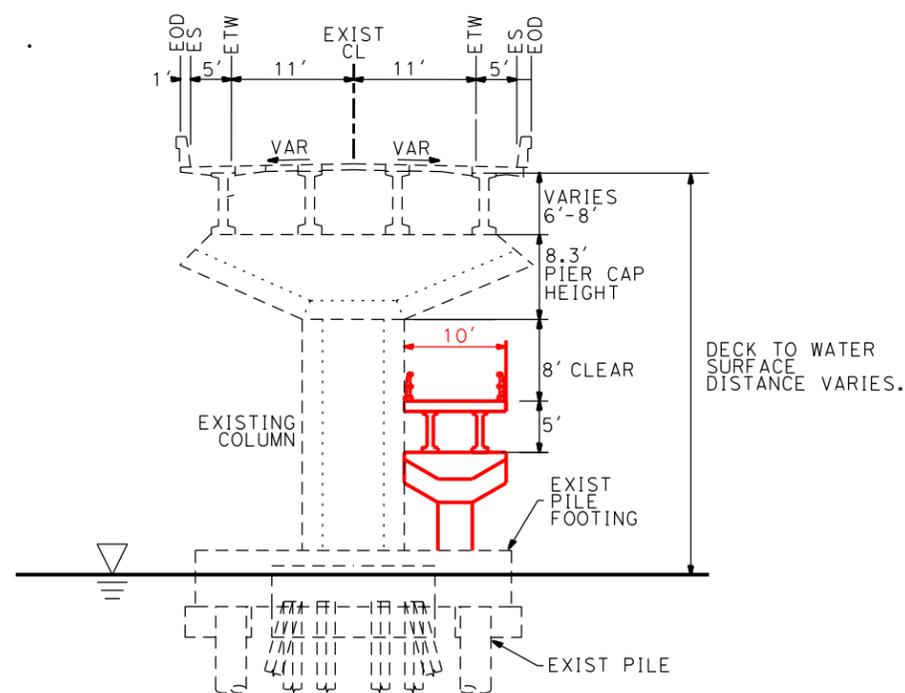
**FEATURE 1.3  
CLASS I BIKEWAY**

SUPERVISING ENGINEER  
 CALCULATED-DESIGNED BY  
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 REVISOR BY  
 DATE REVISOR  
 STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 Caltrans

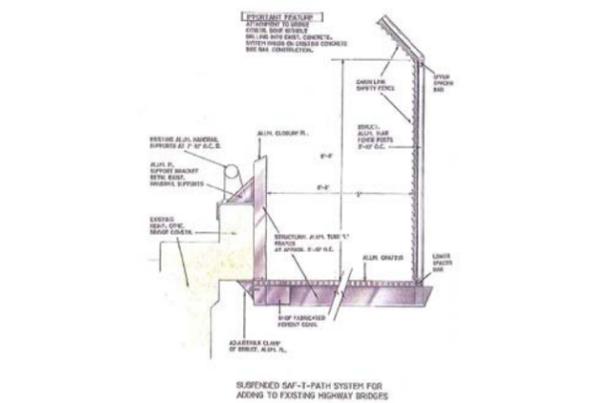
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# DESIGN STUDY ONLY

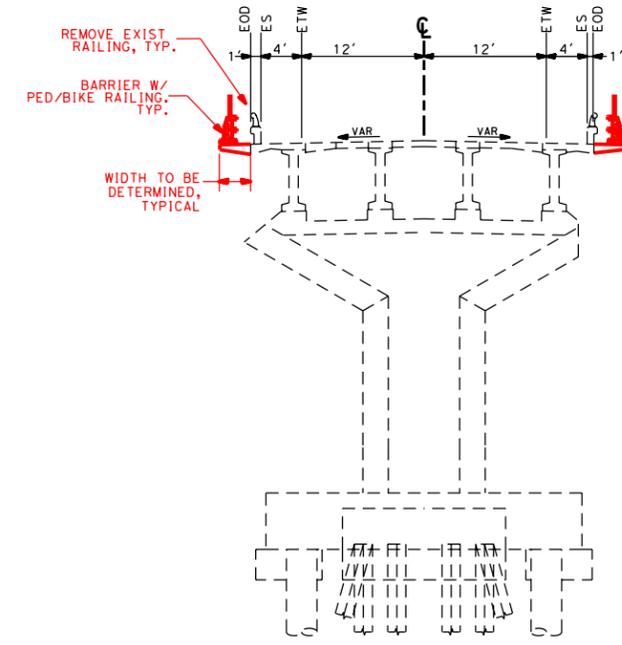
## SEGMENT 1 NON-MOTORIZED TRAFFIC IMPROVEMENTS



CLASS I  
SECOND LEVEL DECK  
**FEATURE 1.5**



CLASS I  
Cantilevered Deck  
(SAF-T-PATH Cantilever System)  
**FEATURE 1.6**



CLASS II or III  
WIDENED SHOULDERS WITH  
CANTILEVERED DECK  
**FEATURE 1.7**

### SECTION A-A

## DESIGN STUDY ONLY

SR 255  
ENGINEERING FEASIBILITY STUDY  
DECEMBER 2012  
**ATTACHMENT D2**

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SUPERVISING ENGINEER  
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REVISOR BY  
DATE REVISOR

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BORDER LAST REVISED 11/1/2006

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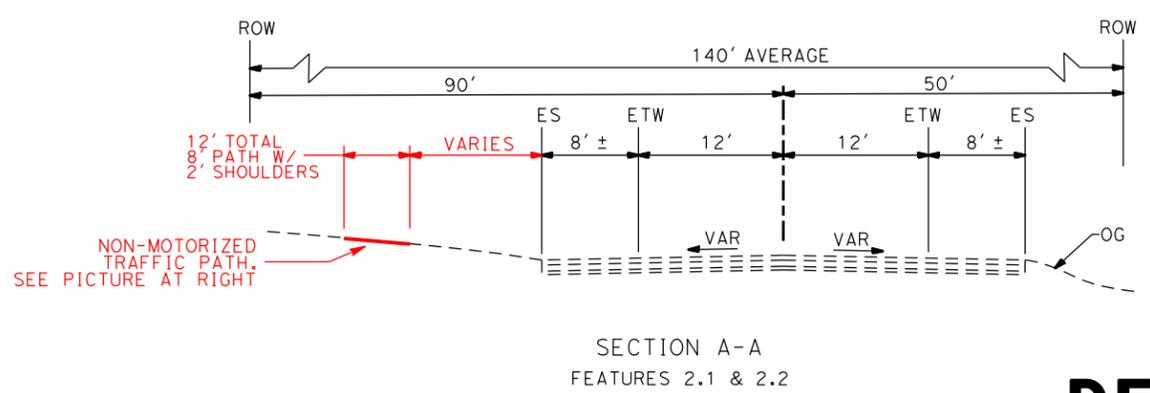
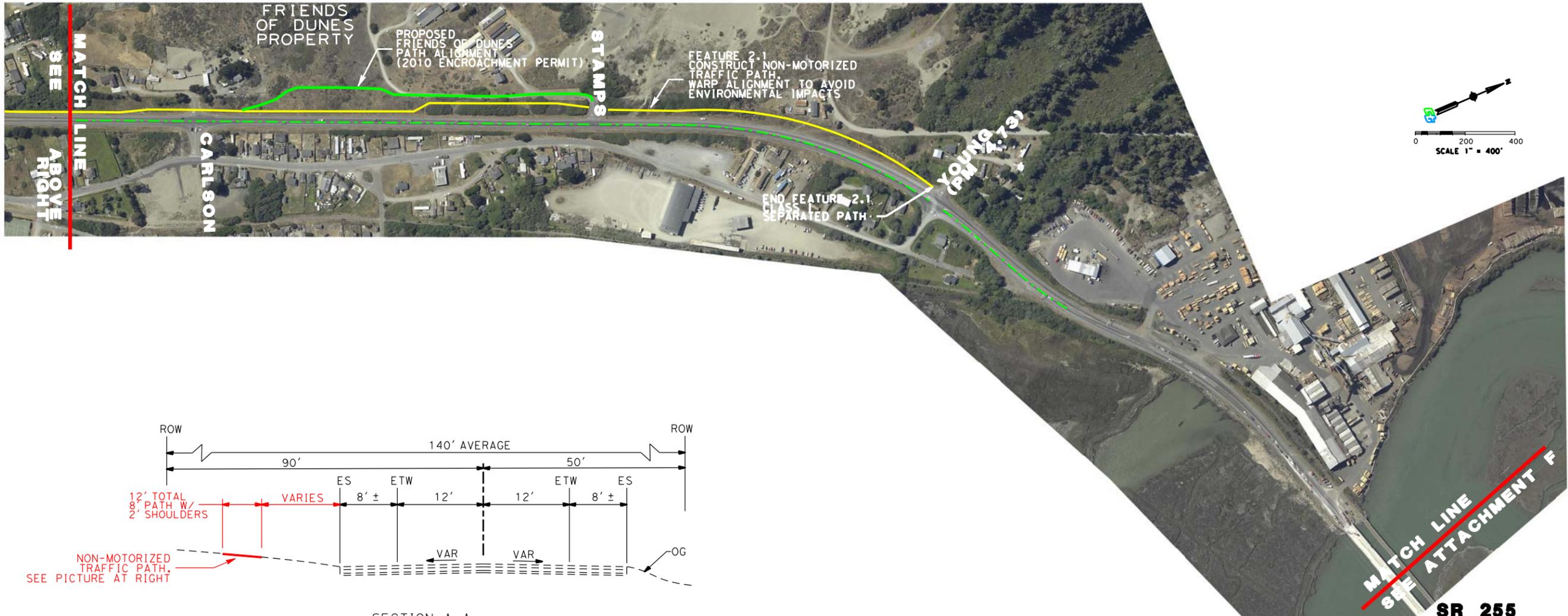
# **ATTACHMENT E**

## **SEGMENT 2 NON-MOTORIZED TRAFFIC IMPROVEMENTS**

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# DESIGN STUDY ONLY

## SEGMENT 2 NON-MOTORIZED TRAFFIC IMPROVEMENTS



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 DEPARTMENT OF TRANSPORTATION



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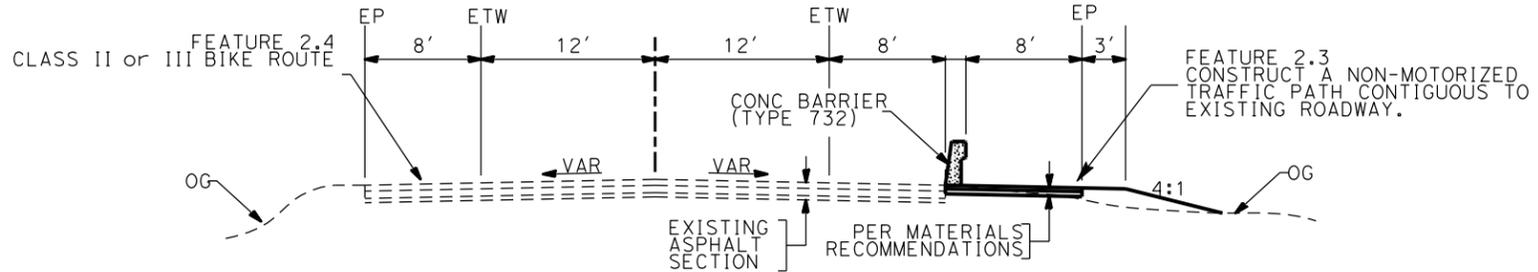
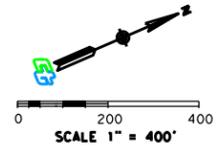
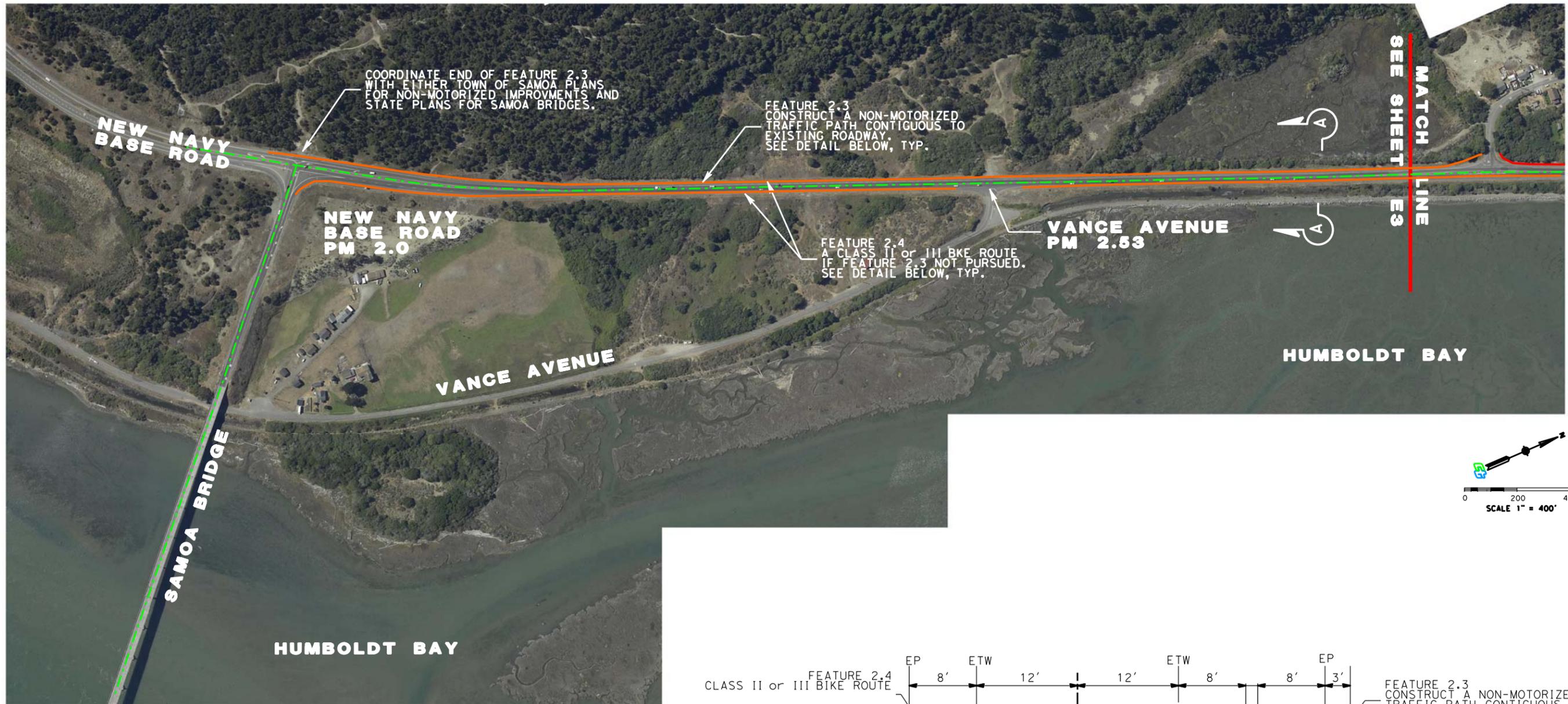
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**ENGINEERED FEASIBILITY STUDY**  
 DECEMBER 2012  
**ATTACHMENT E1**



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	HUM	255	0.0/8.3	-	-

**DESIGN STUDY ONLY**

# SEGMENT 2 NON-MOTORIZED TRAFFIC IMPROVEMENTS



**SECTION A-A**  
FEATURE 2.3 & 2.4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
*Caltrans*  
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 DATE REVISED

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**ENGINEERED FEASIBILITY STUDY**  
 DECEMBER 2012  
**ATTACHMENT E2**

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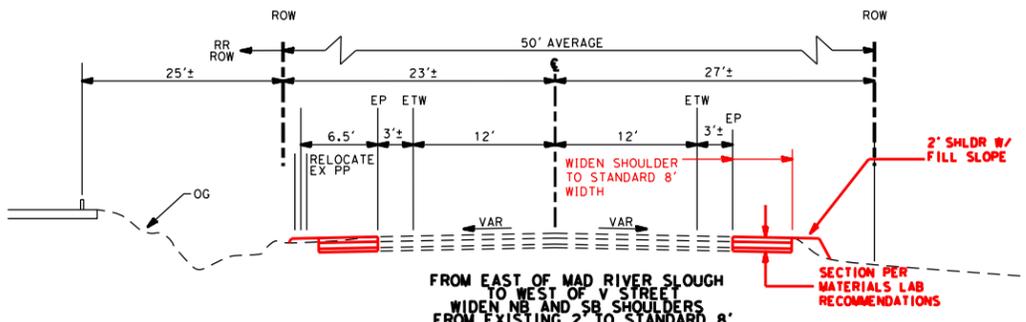
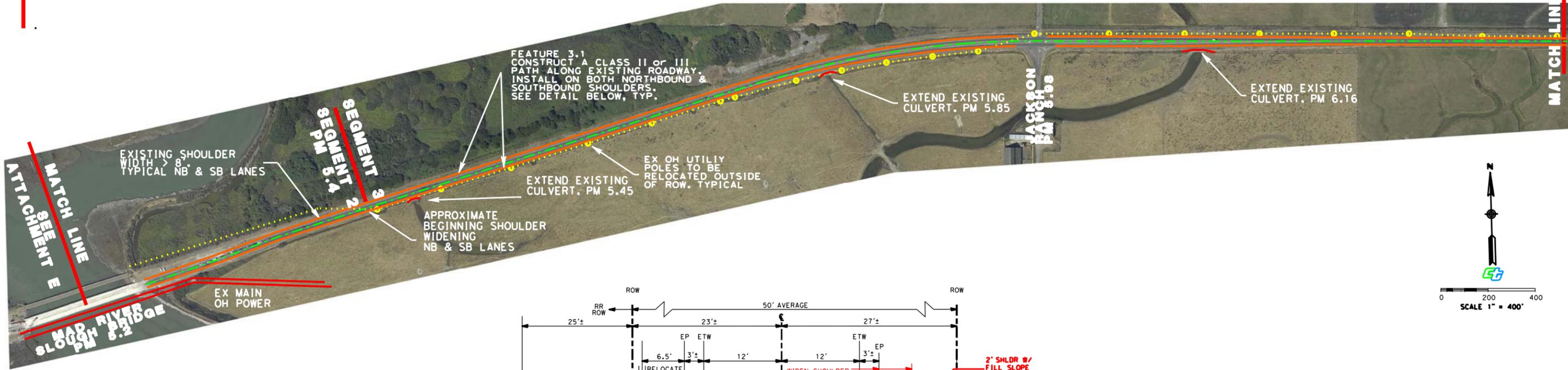
# **ATTACHMENT F**

## **SEGMENT 3 NON-MOTORIZED TRAFFIC IMPROVEMENTS**

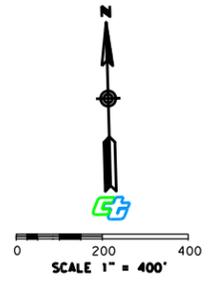
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# DESIGN STUDY ONLY

## SEGMENT 3 NON-MOTORIZED TRAFFIC IMPROVEMENTS



**SECTION A-A**  
FEATURE 3.1 (PM 5.4-7.2)



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SUPERVISING ENGINEER

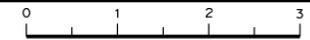
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



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RELATIVE BORDER SCALE IS IN INCHES



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ENGINEERED FEASIBILITY STUDY  
DECEMBER 2012  
ATTACHMENT F1**

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TIME PLOTTED => \$TIME  
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# **ATTACHMENT G**

## **SEGMENT 4 NON-MOTORIZED TRAFFIC IMPROVEMENTS**

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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**DESIGN STUDY ONLY**

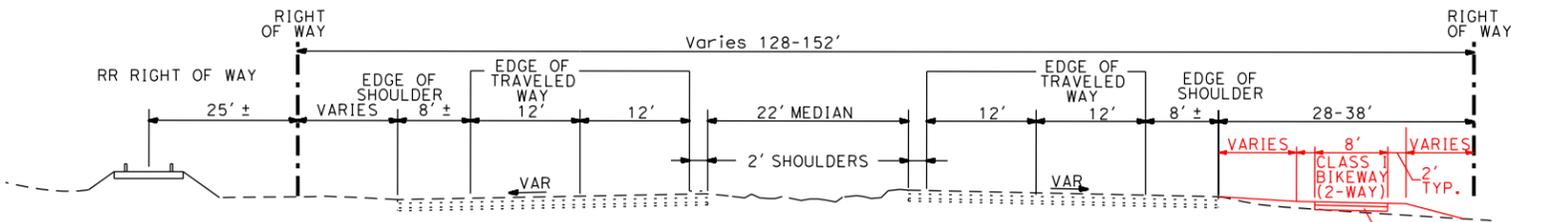
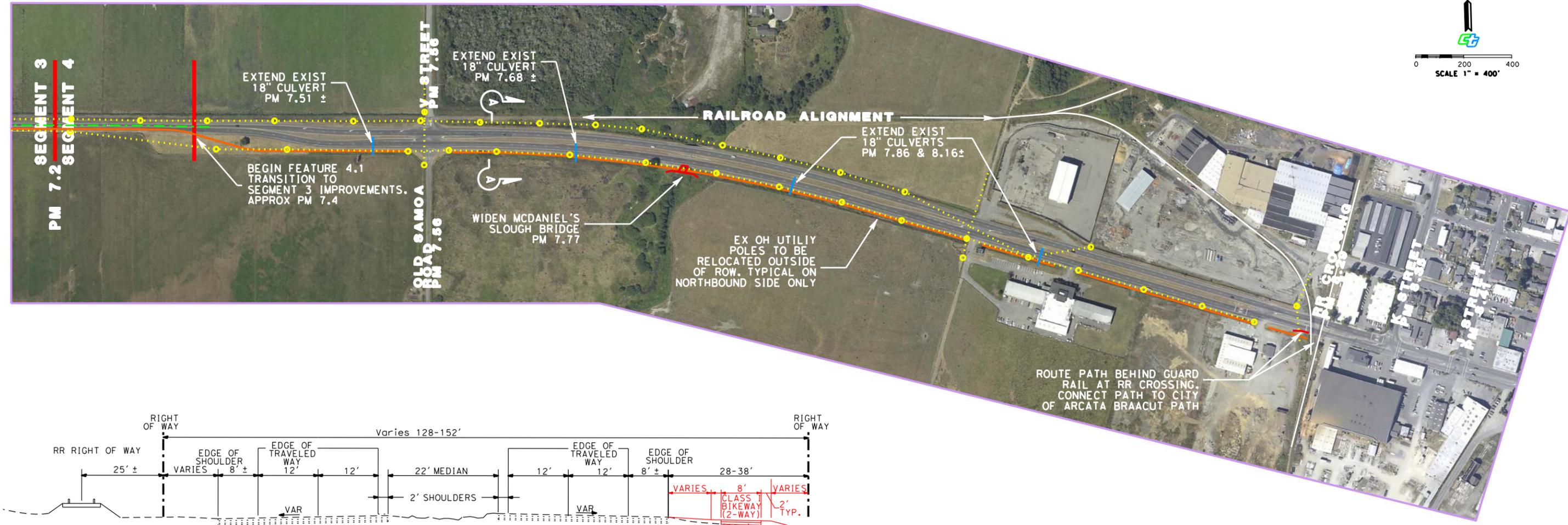
# SEGMENT 4 NON-MOTORIZED TRAFFIC IMPROVEMENTS

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**Caltrans**



**SECTION A-A**  
FEATURE 4.1 (PM 7.4/8.3)

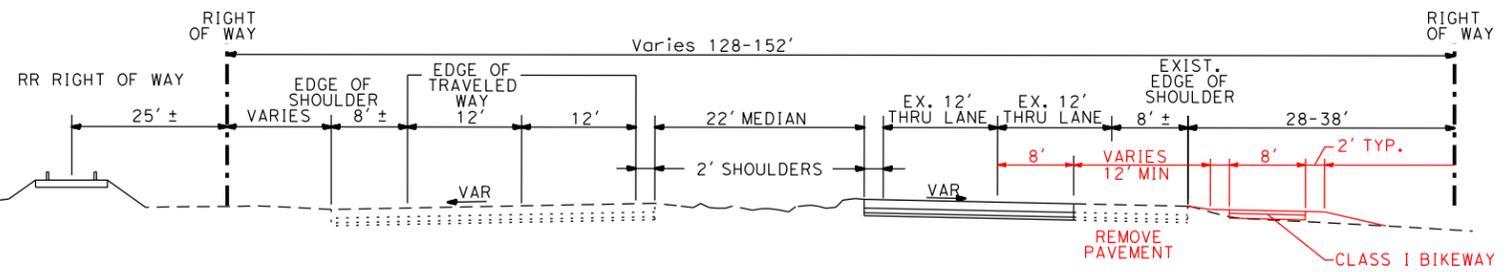
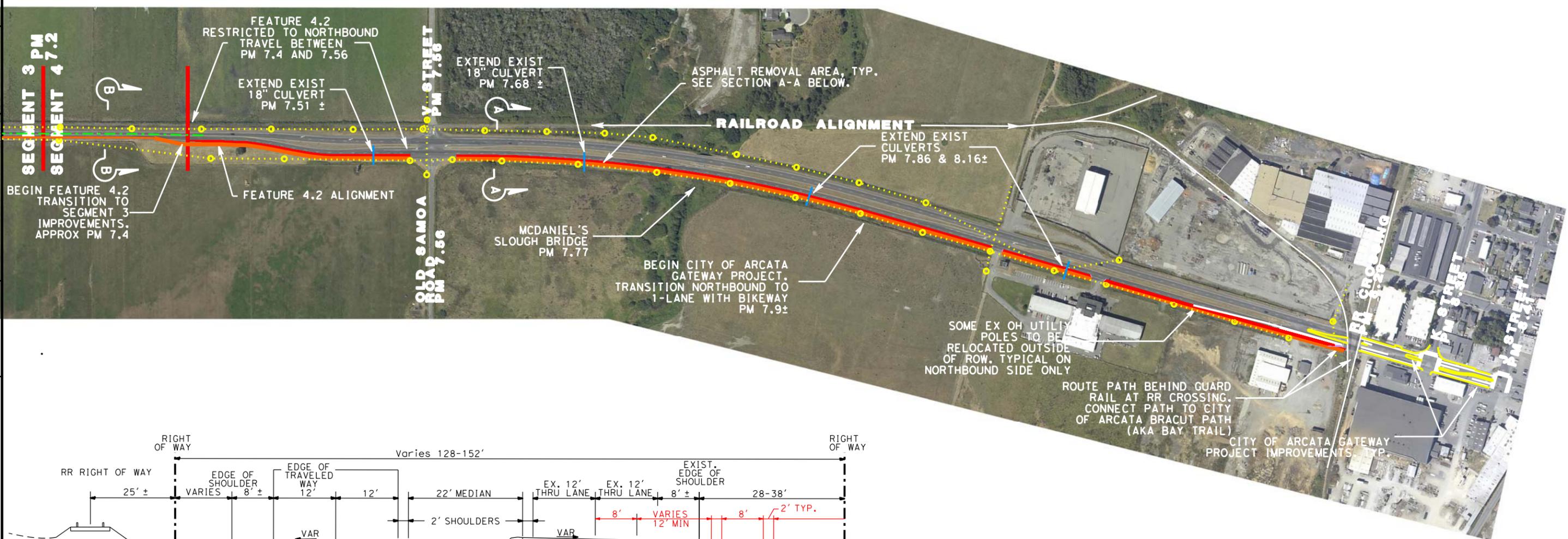
**DESIGN STUDY ONLY**

**SR 255  
ENGINEERED FEASIBILITY STUDY  
DECEMBER 2012  
ATTACHMENT G1**

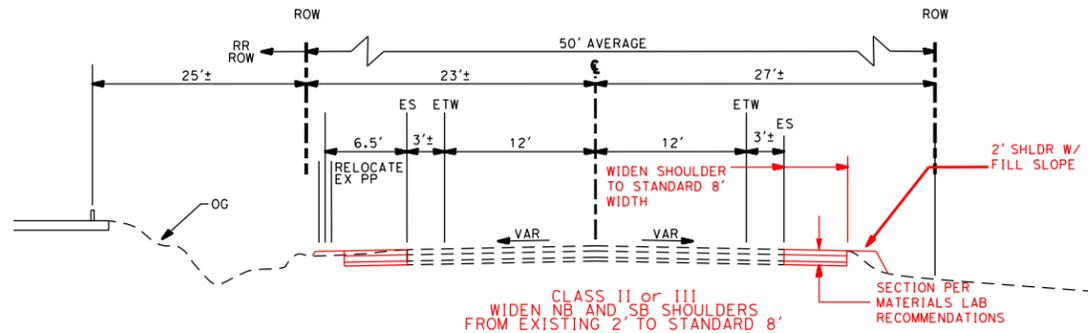
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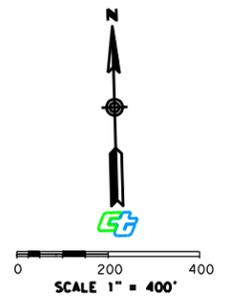
## SEGMENT 4 NON-MOTORIZED TRAFFIC IMPROVEMENTS



**SECTION A-A**  
FEATURE 4.2 (PM 7.4/8.3)



**SECTION B-B**  
FEATURE 4.3 (PM 7.2-7.4)



**SR 255  
ENGINEERED FEASIBILITY STUDY  
DECEMBER 2012  
ATTACHMENT G2**

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**Caltrans**

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# **ATTACHMENT H**

## **COST ESTIMATES**

# NON MOTORIZED TRAFFIC IMPROVEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### SEGMENT 1

#### FEATURE 1.1 - Class I, Deck Widening (New Foundations)

TOTAL ROADWAY ITEMS	\$1,300,000
TOTAL STRUCTURE ITEMS	\$27,700,000
SUBTOTAL CONSTRUCTION COSTS	\$29,000,000
TOTAL RIGHT OF WAY ITEMS	\$490,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$29,490,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$7,500,000
TOTAL COSTS	\$36,990,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$30 to \$44</b>

#### FEATURE 1.2 - Class II or III, Deck Widening (New Foundations)

TOTAL ROADWAY ITEMS	\$990,000
TOTAL STRUCTURE ITEMS	\$26,200,000
SUBTOTAL CONSTRUCTION COSTS	\$27,190,000
TOTAL RIGHT OF WAY ITEMS	\$200,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$27,390,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$7,000,000
TOTAL COSTS	\$34,390,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$28 to \$41</b>

#### FEATURE 1.3 - Class I, Deck Widening (Pier Cap Extensions)

TOTAL ROADWAY ITEMS	\$1,300,000
TOTAL STRUCTURE ITEMS	\$19,200,000
SUBTOTAL CONSTRUCTION COSTS	\$20,500,000
TOTAL RIGHT OF WAY ITEMS	\$470,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$20,970,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$5,250,000
TOTAL COSTS	\$26,220,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$21 to \$31</b>

# NON MOTORIZED TRAFFIC IMPROVEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY

### COST ESTIMATE SUMMARY

#### FEATURE 1.4 - Class II or III, Deck Widening (Pier Cap Extensions)

TOTAL ROADWAY ITEMS	\$1,000,000
TOTAL STRUCTURE ITEMS	\$15,000,000
SUBTOTAL CONSTRUCTION COSTS	\$16,000,000
TOTAL RIGHT OF WAY ITEMS	\$500,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$16,500,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$4,250,000
TOTAL COSTS	\$20,750,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$17 to \$25</b>

Because Features 1.5, 1.6 and 1.7 were infeasible for engineering, aesthetic, environmental and other reasons, the costs for these improvements were not calculated.

## SEGMENT 2

#### FEATURE 2.1 - Class I, Off-Roadway Path (PM 3.6/4.7)

TOTAL ROADWAY ITEMS	\$900,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$900,000
TOTAL RIGHT OF WAY ITEMS	\$670,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$1,570,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$480,000
TOTAL COSTS	\$2,050,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$1.6 to \$2.5</b>

#### FEATURE 2.2 - Class I, Off-Roadway Path (PM 2.9/3.6)

TOTAL ROADWAY ITEMS	\$700,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$700,000
TOTAL RIGHT OF WAY ITEMS	\$440,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$1,140,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$350,000
TOTAL COSTS	\$1,490,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$1.2 to \$1.8</b>

# NON MOTORIZED TRAFFIC IMPROVEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### FEATURE 2.3 - Class I, Contiguous to Roadway (PM 2.0/4.73)

TOTAL ROADWAY ITEMS	\$5,200,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$5,200,000
TOTAL RIGHT OF WAY ITEMS	\$1,560,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$6,760,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$2,030,000
TOTAL COSTS	\$8,790,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$7 to \$11</b>

### FEATURE 2.4 - Class II or III, Bikeway (PM 1.7/5.4)

TOTAL ROADWAY ITEMS	\$100,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$100,000
TOTAL RIGHT OF WAY ITEMS	\$20,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$120,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$80,000
TOTAL COSTS	\$200,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$0.16 to \$0.24</b>

## SEGMENT 3

### FEATURE 3.1 - Class II or III, Widened Shoulders (PM 5.4/7.2)

TOTAL ROADWAY ITEMS	\$2,800,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$2,800,000
TOTAL RIGHT OF WAY ITEMS	\$1,060,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$3,860,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$1,160,000
TOTAL COSTS	\$5,020,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$4 to \$6</b>

Because Feature 3.2 is infeasible for engineering, aesthetic, environmental and other reasons, the costs for this improvements was not calculated.

# NON MOTORIZED TRAFFIC IMPROVEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### FEATURE 3.3 - Class I, Contiguous to Roadway (PM 5.4/7.2)

TOTAL ROADWAY ITEMS	\$4,700,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$4,700,000
TOTAL RIGHT OF WAY ITEMS	\$900,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$5,600,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$1,680,000
TOTAL COSTS	\$7,280,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$6 to \$9</b>

### SEGMENT 4

### FEATURE 4.1 - Class I, Off-Roadway Path (PM 7.57/8.3)

TOTAL ROADWAY ITEMS	\$1,700,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$1,700,000
TOTAL RIGHT OF WAY ITEMS	\$470,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$2,170,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$660,000
TOTAL COSTS	\$2,830,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$2.3 to \$3.4</b>

### FEATURE 4.2 - Class I, Off-Roadway by Lane Reduction (PM 7.57/8.3)

TOTAL ROADWAY ITEMS	\$1,300,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$1,300,000
TOTAL RIGHT OF WAY ITEMS	\$470,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$1,770,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$540,000
TOTAL COSTS	\$2,310,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$1.8 to \$2.8</b>

# NON MOTORIZED TRAFFIC IMPROVEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY

### COST ESTIMATE SUMMARY

#### FEATURE 4.3 - Class II or III, Bikeway (PM 7.2/7.4)

TOTAL ROADWAY ITEMS	\$300,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$300,000
TOTAL RIGHT OF WAY ITEMS	\$140,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$440,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$270,000
TOTAL COSTS	\$710,000
COST RANGE IN MILLIONS (+/- 20%)	<b>\$0.6 to \$0.9</b>

# MANILA TRANSPORTATION ENHANCEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### INITIAL IMPROVEMENTS

#### Gateway Monuments, Segment 2 (PM 3.6 & 4.1)

TOTAL ROADWAY ITEMS	\$120,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$120,000
TOTAL RIGHT OF WAY ITEMS	\$55,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$175,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$110,000
TOTAL COSTS	\$290,000
COST RANGE (+/- 20%)	<b>\$240,000 to \$350,000</b>

#### Landscaping, Segment 2 (PM 3.6 through 4.1)

TOTAL ROADWAY ITEMS	\$90,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$90,000
TOTAL RIGHT OF WAY ITEMS	\$26,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$116,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$70,000
TOTAL COSTS	\$186,000
COST RANGE (+/- 20%)	<b>\$150,000 to \$230,000</b>

#### Painted Medians and Islands, Segment 2 (PM 3.64 through 3.94)

TOTAL ROADWAY ITEMS	\$410,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$410,000
TOTAL RIGHT OF WAY ITEMS	\$154,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$564,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$340,000
TOTAL COSTS	\$910,000
COST RANGE (+/- 20%)	<b>\$730,000 to \$1,100,000</b>

# MANILA TRANSPORTATION ENHANCEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### INITIAL IMPROVEMENTS

Optical Speed Bars, Segment 2 (PM 3.55 through 3.65 & PM 4.16 through 4.26)

TOTAL ROADWAY ITEMS	\$22,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$22,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$44,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$30,000
TOTAL COSTS	\$80,000
COST RANGE (+/- 20%)	<b>\$70,000 to \$100,000</b>

Radar Feedback Signs, Segment 2 (PM 3.6 & 4.3)

TOTAL ROADWAY ITEMS	\$265,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$265,000
TOTAL RIGHT OF WAY ITEMS	\$55,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$320,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$200,000
TOTAL COSTS	\$520,000
COST RANGE (+/- 20%)	<b>\$420,000 to \$630,000</b>

Colorized Shoulders, Segment 2 (PM 3.54 through 4.16)

TOTAL ROADWAY ITEMS	\$367,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$367,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$389,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$240,000
TOTAL COSTS	\$630,000
COST RANGE (+/- 20%)	<b>\$510,000 to \$760,000</b>

# MANILA TRANSPORTATION ENHANCEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### FUTURE IMPROVEMENTS

#### Curbed Medians and Islands, Segment 2 (PM 3.64 through 3.94)

TOTAL ROADWAY ITEMS	\$234,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$234,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$256,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$160,000
TOTAL COSTS	\$420,000
COST RANGE (+/- 20%)	<b>\$340,000 to \$510,000</b>

#### Safety Lighting, Segment 2 (PM 3.64 and 3.94)

TOTAL ROADWAY ITEMS	\$312,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$312,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$334,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$210,000
TOTAL COSTS	\$550,000
COST RANGE (+/- 20%)	<b>\$440,000 to \$660,000</b>

#### Roundabouts (Manila), Segment 2 (PM 3.64 and/or 3.94)

TOTAL ROADWAY ITEMS	\$3,300,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$3,300,000
TOTAL RIGHT OF WAY ITEMS	\$0
TOTAL PROJECT CAPITAL OUTLAY COST	\$3,300,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$1,320,000
TOTAL COSTS	\$4,620,000
COST RANGE (+/- 20%)	<b>\$3,700,000 to \$5,550,000</b> each

# MANILA TRANSPORTATION ENHANCEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### FUTURE IMPROVEMENTS

#### Traffic Signals (Manila), Segment 2 (PM 3.64 and/or 3.94)

TOTAL ROADWAY ITEMS	\$1,880,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$1,880,000
TOTAL RIGHT OF WAY ITEMS	\$240,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$2,120,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$850,000
TOTAL COSTS	\$2,970,000
COST RANGE (+/- 20%)	<b>\$2,376,000 to \$3,564,000</b> each

#### All Way Stops (Manila), Segment 2 (PM 3.64 and/or 3.94)

TOTAL ROADWAY ITEMS	\$184,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$184,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$206,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$130,000
TOTAL COSTS	\$340,000
COST RANGE (+/- 20%)	<b>\$280,000 to \$410,000</b> each

#### Pavement Marking (lane narrowing), Segment 2 (PM 3.6 through 4.1)

TOTAL ROADWAY ITEMS	\$75,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$75,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$97,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$60,000
TOTAL COSTS	\$160,000
COST RANGE (+/- 20%)	<b>\$130,000 to \$200,000</b>

# MANILA TRANSPORTATION ENHANCEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### FUTURE IMPROVEMENTS

#### HAWK Crosswalk, Segment 2 (PM 3.64 and/or 3.94)

TOTAL ROADWAY ITEMS	\$287,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$287,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$309,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$190,000
TOTAL COSTS	\$500,000
<b>COST RANGE (+/- 20%)</b>	<b>\$400,000 to \$600,000</b>

#### Standard Crosswalk, Segment 2 (PM 3.64 and/or 3.94)

TOTAL ROADWAY ITEMS	\$10,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$10,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$32,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$30,000
TOTAL COSTS	\$70,000
<b>COST RANGE (+/- 20%)</b>	<b>\$56,000 to \$84,000</b>

#### Pedestrian Grade Separation Crossing, Segment 2 (PM 3.64 or 3.94)

TOTAL ROADWAY ITEMS	\$161,000
TOTAL STRUCTURE ITEMS	\$2,034,000
SUBTOTAL CONSTRUCTION COSTS	\$2,195,000
TOTAL RIGHT OF WAY ITEMS	\$88,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$2,283,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$1,380,000
TOTAL COSTS	\$3,670,000
<b>COST RANGE (+/- 20%)</b>	<b>\$2,940,000 to \$4,410,000</b> each

# MANILA TRANSPORTATION ENHANCEMENTS

## SR 255 ENGINEERED FEASIBILITY STUDY COST ESTIMATE SUMMARY

### FUTURE IMPROVEMENTS

#### Bus Turnout, Segment 2 (PM 3.79)

TOTAL ROADWAY ITEMS	\$720,000
TOTAL STRUCTURE ITEMS	\$0
SUBTOTAL CONSTRUCTION COSTS	\$720,000
TOTAL RIGHT OF WAY ITEMS	\$22,000
TOTAL PROJECT CAPITAL OUTLAY COST	\$742,000
SUPPORT COST (PROJECT DEVELOPMENT)	\$450,000
TOTAL COSTS	\$1,200,000
COST RANGE (+/- 20%)	<b>\$960,000 to \$1,440,000</b>

# **ATTACHMENT I**

**PUBLIC COMMENTS**

Hum 255 Feasibility Study Open House  
January 7th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: Brittney Lucas  
Address: 1844 KEFE ST  
City: MANILA State: CA Zip: \_\_\_\_\_  
Representing Name of Organization or Agency: RESIDENT  
Comments: WOULD LOVE ROUND-ABOUTS FOR  
SAFETY AND BIKE TRAILS ALONG 255.

Please return by February 28th, 2010

Hum 255 Feasibility Study Open House  
January 7th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: Colleen Clifford  
Address: 915 Orange Dr.  
City: Arcata State: CA Zip: 95521  
Representing Name of Organization or Agency: Manila neighbors  
Comments: Class 1 bike paths are my preference, and  
I really feel that finding can be found to get them in. I also  
want good pedestrian crossing available, as a priority over  
speed/convenience for motorists. I also like visual  
traffic calming ideas - gateways, landscaping, signs indicating  
you're entering a community.

Please return by February 28th, 2010

Name: Nancy Ihara

Address:

City: State: Zip:

Representing Name of Organization or Agency:

Comments: Perhaps local artists can be involved in Gateway monuments if it is decided to construct these

Please return by February 28th, 2010

Name: Nancy Ihara

Address:

City: State: Zip:

Representing Name of Organization or Agency:

Comments: I really support class 1 bikeway path on west side of 255 for bicyclist & pedestrians - maybe especially between Pacific and Young. Please co-ordinate with

Please return by February 28th, 2010 Friends of The Dunes & Their Nature Ctr.

Name: Nancy Tharg  
Address: 231 Dean St  
City: Arcata State: CA Zip: 95521  
Representing Name of Organization or Agency: Self + Safe Paths

Comments: Medians through Manila with low growing groundcover to me seems to be a really good idea. Medians, even more than roundabouts signify "community".

Please return by February 28th, 2010

Name: RANDY FRINT  
Address: 155 Abbott Ln.  
City: Arcata State: Ca Zip: 95521  
Representing Name of Organization or Agency:

Comments: Re Open Hwy 101 To Reasonable Speed. With longer On And Off Ramps.

This will Divert Traffic Away From Hwy 255

Please return by February 28th, 2010

Hum 255 Feasibility Study Open House  
January 27th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: Cathy Garriga  
Address: 1505 Peninsula Dr.  
City: Manila State: CA Zip: 95521  
Representing Name of Organization or Agency: Resident of MCSO Board  
Comments: Thanks for the poster presentation of people available to answer questions. We're looking forward to a creative solution to the lack of safe alternatives for pedestrians, bikes & horses in our community. See you at the next public meeting!

Hum 255 Feasibility Study Open House  
January 27th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: DAN IHARA  
Address: 231 DEAN ST.  
City: ARCATA State: CA Zip: 95521  
Representing Name of Organization or Agency: INDIVIDUAL  
Comments: SUPPORT TWO BUS PULL-OUT LANES NORTH & SOUTH (2 EACH) ON HWY <sup>255</sup> FOR BUS TO PULL OUT WITH REDUCED TRAVEL ON MAINLAND SIDE STREETS AND AN INCREASE IN STOPS IN MANILA.

Please return by February 28th, 2010

Name: DAN IHARA  
Address: 231 DEAN ST.  
City: ARCATA State: CA Zip: 95521  
Representing Name of Organization or Agency: INDIVIDUAL  
Comments: THERE SHOULD HAVE BEEN AN EIR ON THE ORIGINAL SAFETY CORRIDOR PROPOSAL. IMPROVEMENTS TO THE SAFETY CORRIDORS ARE LIKELY TO INCREASE TRAFFIC THROUGH MANILA. CALTRANS AS OPERATOR OF THE HWY IS RESPONSIBLE FOR ANY ADVERSE IMPACTS.

Please return by February 28th, 2010

Name: Kaye Tobin  
Address: 1818 Victor BL  
City: ARCATA State: CA Zip: 95521  
Representing Name of Organization or Agency: RESIDENT  
Comments: We really appreciate the information and presentation - I am 80 years <sup>young</sup> old + cross from Victor to Karpis to the dunes + ocean 6 days a week at 8 am. I have sight in just one eye + my hearing is limited - It would help a lot if drivers had car lights on + were going a little slower at this intersection. Please return by February 28th, 2010  
And how do I get a horse across the highway? and ride a bike safely to town? Thanks

Hum 255 Feasibility Study Open House  
January 27th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: Rita Carlsson  
Address: POB 3753  
City: Eureka State: CA Zip: 95502  
Representing Name of Organization or Agency:

Comments:  
getting on & off the highway  
is scary.  
More landscaping would  
be appreciated; reduce  
speed

Please return by February 28th, 2010

Hum 255 Feasibility Study Open House  
January 27th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: Jack Durham  
Address: 366 Beach Dr  
City: Manila State: CA Zip: 95521  
Representing Name of Organization or Agency: self

Comments: Class 1 Bike path  
would be great in conjunction  
with 1 or 2 Roundabouts!

Please return by February 28th, 2010

Name: Mike van Hattem  
Address: 2033 Haeger Ave  
City: Arcata State: CA Zip: 95521  
Representing Name of Organization or Agency: Arcata Resident  
Comments: My priority is a Class I (no less than two) bike path from Arcata to at least Manila. The current shoulder through the Arcata bottoms is extremely dangerous. I was nearly sucked under a logging truck on this stretch and I  
Please return by February 28th, 2010 NO longer will ride this road. Please make bike riding safe on this stretch of road - Thank you

Name: Kimi Durham  
Address: 366 Beach Dr  
City: Manila State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Representing Name of Organization or Agency: \_\_\_\_\_  
Comments: \_\_\_\_\_  
I feel that Roundabouts would really slow the traffic down which would benefit our community!  
Please return by February 28th, 2010

Hum 255 Feasibility Study Open House  
Janua 7th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

*Dangerous to turn  
off 255 at Dean  
during rainy season*

Name: Dendra Douglas  
Address: 419 Beach Drive  
City: Arcata (Marilla) Ca State: Ca Zip: 95521

Representing Name of Organization or Agency:

Comments: Safe routes to school children not  
allowed to cross 255 to catch the bus.  
LOWER THE SPEED LIMIT  
ROUNDABOUTS - will lower speed + allow  
safe crossing of 255. Dangerous to walk across

Please return by February 28th, 2010 No turn lanes / deceleration  
lanes on several cross streets - esp Dean  
Highway

Hum 255 Feasibility Study Open House  
Jan 27th, 2010 4:30 - 6:30 pm  
Manila Community Center, 1611 Peninsula Drive, Room B.

Name: Jeremy Mills  
Address: 1616 F St Apt A  
City: Eureka State: CA Zip: 95501

Representing Name of Organization or Agency:

Comments: identify phasing of project  
What could be done in the near future  
i.e. with SHOP dollars i.e. paint, intersection  
improvements, standard width shoulders  
between Mad River Slough and Arcata  
turn pockets

Please return by February 28th, 2010

and what would be longer term

improvements  
Class 1 pathway and  
bridges

Look back at lane width and  
paint v in w - Trans study  
concepts

California Dept. of Transportation  
Attn: Brian Simon  
c/o: Hum 255 Feasibility Project  
PO Box 3700  
Eureka, CA 95502



## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Meeting (#2)

Date: February 15, 2012 4:30 - 6:30 pm

Venue: Manila Community Center, 1611 Peninsula Drive, Room B

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
1	1	Brooks	Karen	Brooks for Supervisor	Bayside	Many people walk, run, bike across bridges, but very dangerous and goes against our non-motorized culture. Give ped corridor on bridges a high priority, please. Segment 1	In the Study, several concepts are being analyzed for non-motorized traffic on the Samoa Bridges.
2		SAME	AS	ABOVE		The people want a safety corridor of 45-50 mph. Hwy crossings with flashing lights. Separate pathway for walking, bikes and horses. It is not easy pulling a horse trailer on to road (255) at Peninsula and Mabell Dunes. Segment 2	Caltrans is developing a plan to reduce the prevailing speed through traffic calming measures. The plan also takes into consideration multi-modal users and improvements that can be added to the facility to increase access and safety. With successful implementation of traffic calming improvements, entering the highway with a horse trailer should become easier.
3	2	Fennell	Michael		1480 Peninsula Drive Manila, CA 95521	Consider a Gateway monument, lower speed limits, roundabout & bike lanes.	Analysis of these features will be included in the study.
4	3	Dunn	Mary	Self Resident	1664 Victor Blvd Manila, CA 95521	Specifically, left turns on Dean Ave SR 255 Intersection - currently there is only a single gap in line marking. <u>No signs, no warnings, no lights</u> - many accidents (including a fatality) have already occurred at this intersection.	Traffic Safety is undertaking an Operational Investigation to study potential improvements such as signing, marking.
5	4	Lima	Darcey	Northern Humboldt	1590 Pebble Lane Manila, CA 95521	Put flashing yellow light at Victor/Pacific intersection, <u>cheap, easy</u> , can't see turn off at night!!	Intersection improvements being considered include signals, roundabouts and all-way stops.
6		SAME	AS	ABOVE		It would be nice to help do something respectful so that when a family needs to cross or ride bikes - they are safe!!	Several types of crossing improvements are being considered in the study
7	5	Wright	Robert		1500 Peninsula Drive Manila, CA 95521	45 mph thru Manila is preferred. Not through the bottoms where there is not cross traffic.	Guidance on reducing the posted speed is outlined in the CVC and the Traffic Manual. Arbitrarily reducing the speeds would create a speed trap. A section in the final report will detail process of setting posted speeds and why they can't be arbitrarily set.
8	6	Lucas	B	Self Resident		I live in Manila - I cross 255 with dog and child - we ride bikes - our community has no respectful crossing and is able to drive 55mph through a small community. What can we do?	Study will analyze reasonable approach to reduce speeds through traffic calming measures and then introduce crossing features after successful reduction in prevailing speeds.

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Meeting (#2)

Date: February 15, 2012 4:30 - 6:30 pm

Venue: Manila Community Center, 1611 Peninsula Drive, Room B

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
9	7	Seebar	Michael	MCSO	1407 Peninsula Drive Manila, CA 95521	We still need to address the fundamental problem of the speed limit being to high.	See response to Comment Number 7
10	8	Wilhelm	Jenny	Community Member	1457 Peninsula Dr Manila, CA 95521	*Reduce speed to 45 mph. *Increase CHP patrol (never see them). *In last 6 weeks have passed on a double yellow 3x's. *In last 6 weeks have seen people crossing @ double yellow at intersections.	See response to Comment Number 7. CHP and Sheriffs are partners and have been informed of concerns of community.
11	9	Lee	Linda		355 Pacific Road Manila, CA 95521	Enough with the feasibility studies. We've been wasting \$\$ and time on several of those for 20 years!! Time to get to work.	The final feasibility study will provide a reference document for Caltrans and other agencies, both public and private. These partners can use the document to compete statewide for funding of the improvements that have been vetted through the community and the Department.
12		SAME	AS	ABOVE		Traffic calming measures at north end need to begin before Stamps Lane, turn for Friends of the Dunes, with high traffic.	Some are proposed in this location (Radar Feedback and Optical Speed Bars). Study reviewing whether traffic volume at Stamps Lane justify turning lane.
13		SAME	AS	ABOVE		You've got a lot of good ideas - let's see some action.	Some features can be installed in short term either though Minor B Program or maintenance forces.
14		SAME	AS	ABOVE		Wider shoulders and "share the road" signs at both ends are needed along entire length of 255.	These features being considered in study
15	10	Bramlett	Janette	MCSO	1502 Peninsula Dr Manila, CA 95521	Painting roads/turnoffs off the 255 - road edge markings are virtually invisible. Also need replacements for road marker "sticks" on the roadside. Optical striping/markers sounds good.	Traffic Safety is undertaking an Operational Investigation to study potential improvements such as signing, marking. Improvements may be installed with work planned under maintenance project this fall (2012)
16	11	Roberson	Jon		1590 Pebble Lane Manila, CA 95521	Please put flashing yellow light at Pacific intersection.	Intersection improvements being considered include signals, roundabouts and all-way stops.
17	12	Berg	Julian	LACO	846 A street Arcata, CA 95521	Slow traffic to 45mph, bike lane separate from drive lanes. Widen Samoa Bridge for Bike/Ped Lane.	Regarding speed reduction see response to comment #7. Other recommendations are under study

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Meeting (#2)

Date: February 15, 2012 4:30 - 6:30 pm

Venue: Manila Community Center, 1611 Peninsula Drive, Room B

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
18	13	Marks	Richard		110 Rideout Street Samoa, CA 95564	Please make speed limit 45mph on all 255.	See response to Comment Number 7
19	14	O'Leary	Daniel	Self/Resident	243 Dean Ave Arcata, CA 95521	30mph expand to top of bridge at Entrance to Eureka by 250' to top of bridge.	See response to Comment Number 7
20	15	Vander Meer	Carol	Community Member Friends of the Dunes	44 Pelican Lane Arcata, CA 95521	When you implement traffic calming, please put up a sign that says something like: This community is working to lower speeds and have implemented traffic calming features. Please include a new entry to Friend's of the Dune's Humboldt Coastal Nature Center, or put a left turn at Stamps Lane.	Said signs are not standard. New entry is beyond scope.
21	16	Hoes	M		1961 Locke Street Manila, CA 95521	Mark Pacific & Lupin, at least paint lines - very difficult in fog - rain. Dangerous intersection of Hwy at Lupine & Locke - mark the intersections.	See response to Comment Number 15
22	17	Hasink	Michelle		1976 Peerless Ave Manila, CA 95521	I was almost rear-ended by someone driving at over 80mph when turning left on Pacific Ave. He veered at the last second almost flipping his car. I was waiting for a pedestrian. My 9 year old and I were almost killed.	Implementation of traffic calming features and increased enforcement can potentially reduce such incidents
23		SAME	AS	ABOVE		Another comment, gravel builds up on all entrances to Manila to Hwy 255 (almost all of them are slightly uphill). My wheels spin every time I go to pull on to the freeway, delaying my ability to safely enter the freeway. If someone on the freeway is speeding, it can be quite frightening, especially at rush hour.	Relayed to maintenance forces and will be evaluated in Traffic Safety Operational Analysis
24	18	Anonymous				Daylight Headlight Zone.	Traffic Safety considering
25		SAME	AS	ABOVE		Use lights in the fog.	see above
26		SAME	AS	ABOVE		Cut down 55 mph sign.	See response to Comment Number 7
27		SAME	AS	ABOVE		Traffic calming - jackhammer the road.	no response warranted
28		SAME	AS	ABOVE		Paint silhouettes of dead people in the road.	no response warranted
29		SAME	AS	ABOVE		Please drive slow.	See response to Comment Number 7

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Meeting (#2)

Date: February 15, 2012 4:30 - 6:30 pm

Venue: Manila Community Center, 1611 Peninsula Drive, Room B

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
30		SAME	AS	ABOVE		Bike Lane.	Being considered in study
31		SAME	AS	ABOVE		Pedestrian Lane.	see above
32		SAME	AS	ABOVE		Traffic Light.	Being considered in study
33	19	Knapp	Rick	Humboldt Bay Bicycle Commuters Association	P.O. Box 9054 Eureka, CA 95502	We think priority should be given to side widening for portions 2-3' wide. Roundabouts could get speeds down to allow 45 mph to be established. Like radar detections signs.	Shoulder widening in Segment 3 is a priority. Roundabouts being considered. Radar Feedback sign project in design and scheduled for installation in Fall 2012
34	20	Lima	Shelley	Community Member	1877 Lupin Drive Manila, CA 95518	RE: Safely turning onto 255 from Lupin - huge ditch where land has sunk quite significantly on a yearly basis - witnessed at least one accident at this site involving turning & a log truck smashed with truck.	Collision locations, frequency and severity have been identified in the report. Traffic calming features can potentially reduce these.
35	21	Hudson	Dale		4510 Valley West Blvd. Ste A Arcata, CA 95521	Slow Down. 55 mph through Manila? (many cars going much faster)-- At least 7 entrance side streets in Manila-- VERY Dangerous! Slow Down 35 to 45 would help-	See response to Comment Number 7
36	22	Wilhelm	Robert		145 Holly Dr Manila, CA 95521	Wilhelm Family 3 Generations Manila (40Years) Posted 45 mph signs (limit) no passing signs, Manila only from Mad River slough Bridge (Emmerson Mill) south to 1/4 mile south of Peninsula Dr Intersection (southern intersect)	See response to Comment Number 7
37	23	Ihara	Nancy		231 Dean St Arcata CA 95521	Please keep me informed of any changes regarding who are the people to contact at Caltrans regarding this study and subsequent Caltrans efforts regarding 255.	Noted
38		SAME	AS	ABOVE		Although I personally like painted medians in the interim improvement category WHATEVER improvements have been shown elsewhere to be the most effective have my support.	Noted
39		SAME	AS	ABOVE		I support as a long term, in the future, improvement a roundabout at Lupin & 255. It would be more doable- less environmental constraints thus less costly than other roundabout suggestions. Medians-raised slightly-throughout Manila would be ideal.	Being considered in study
40	24	Clem	Marcella	HCAOG	611 I Street, Suite B Eureka, CA 95501	Great presentation. I wish I could have read the document prior to the meeting. Please include crosswalks and ped xing signs.	Being considered in study

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
1	1	McIntosh	James	Community Member	Caltrans NR Environmental 1656 Union Street Eureka, CA 95501	10 year Manila resident and 5 year Caltrans employee, I have a few suggestions based on reality. It all comes down to money and environmental permits/mitigation. Since little money will ever be available, Segment 1 bridge widening should not be studied further. I don't know when the bridges will need replacing, but plan the extra width when we replace those bridges. Getting permits and tens of millions of dollars for widening is not likely to happen without a 20 year effort, and by that time we will need new bridges.	Agreed. With limited funding being available statewide and agencies focusing their transportation funding on maintenance needs, it's unlikely money will be available to finance the widening of the Samoa Bridges in the near future. Likely will need to wait until the end of the structures life cycle to widen them.
2		SAME	AS	ABOVE		Segment 2 needs the improvements more than any other segment, but many of the suggestions are not feasible due to costs. Class 1 bike paths sound great and I would accept no less. However, the railroad prism needs to be used for this, and it could tie in to the frontage road on the east side of Manila. Caltrans needs to make this happen. There would be no need to create a Class 1 path on the highway right of way. Using the existing facilities would save money on construction and mitigation costs.	Caltrans has no jurisdiction over the RR right of way and this study scope was restricted to features that could be installed with in the state right of way. See comment 16 below regarding NCRA preference that railroad be maintained.
3		SAME	AS	ABOVE		Except for crossing the highway, all pedestrian and bicycle traffic should be encouraged to use the existing off highway frontage roads.	On route facilities are proposed because through Manila non-motorized traffic wouldn't to use frontage roads and there isn't any existing legal means of non-motorized traffic to connect the Lupin and Pacific neighborhoods on the west side of the highway.
4		SAME	AS	ABOVE		The speed must be lowered if pedestrians are to cross the highway. Roundabouts are the best way to do this.	As detailed in the report, speeds can't be arbitrarily lowered. Roundabouts are a future improvement proposal for the reasons detailed in the study.
5		SAME	AS	ABOVE		Stop lights would be hazardous, and there would not be enough cross traffic to warrant stoplights on the highway. Pedestrian crosswalks would be useless (and dangerous) without slowing the speed limit.	Signals and crosswalks are proposed as long term solution after conditions are met, such as speed reductions or meeting signal warrants.
6		SAME	AS	ABOVE		Some kind of lighting would be great at the Dean intersection since it is completely dark at night.	See Comment 8 below regarding lighting at Dean.

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
7		SAME	AS	ABOVE		There had been talk of minimizing some of the entrances and exits to hwy 255 in Manila. I highly recommend keeping them all open. In the event of a tsunami or huge earthquake, the residents of Manila need to evacuate as fast as possible. If our highway entrances were reduced or closed, the time it takes to evacuate will go up, and we only have 5-10 minutes to get to a safe spot. The recommended safe spots are the tall dunes toward the ocean, so we need access to the west (I live on the east side of Manila and use the Dean intersection daily). During the super high tides of winter 2005/2006, Hwy 101 south was closed between Arcata and Eureka. All southbound 101 traffic came through Manila. It created hazardous conditions for residents trying to go south. We could not have turned left on the highway due to a constant line of cars heading south. A roundabout would have made this much safer.	There isn't any proposal to reduce access in the Study.
8		SAME	AS	ABOVE		Speaking of the Dean Ave crossing, without turn pockets, this is a death trap to people unfamiliar with this turn. I have witnessed many near misses and seen 1 crash here as a result of lacking turn pockets ( I frequently use the Lupin exit because of its turn pocket.). Also, as a pedestrian trying to cross here with my 4 year old son, there is no safe place to stand before running across the highway. This is a horrible crossing which has left 1 Manila resident dead, and no fix in site.	Traffic volumes at this intersection do not support turn pocket installation.  At the MCSD Board meeting on 1/17/2013, concerns about this intersection were raised. Subject of the concerns were over corner sight distances, difficulty of seeing edge markings at night and darkness of intersection. Options for installing street lights at this location were discussed in the study and are being revisited after the Board meeting. Installing additional markers is also under review.
9		SAME	AS	ABOVE		Ultimately, Segment 2 could be fixed with a slower speed limit of 45 mph or less. This would cost nothing more than a few signs, and the community would be fully stoked with Caltrans. Cheap, easy, no permits, no mitigation, but fixed. Let's find a way to do this.	As detailed in the report, speeds can't be arbitrarily lowered.

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
10		SAME	AS	ABOVE		Segment 3 needs a Class 1 bike path, and it could be done with the rotting railroad tracks. It is public right of way already, but Caltrans is needed to strong-arm the railroad people into 'railbanking' this segment. Forget the sightseeing train, since it is not on the bayside of the road anyways (and it won't pay for itself). Hardly any mitigation would be needed if the path were on the railroad prism. No other improvements are needed on this section.	Caltrans hasn't the authority to dictate what happens in the railroad right of way and this study scope was restricted to features that could be installed with in the state right of way. See comment 16 below regarding railroad.
11		SAME	AS	ABOVE		Segment 4 needs minor work. Remove the old railroad tracks right before entering Arcata. This should have been done in the 'Arcata Gateway' project. Many cars hit bottom here, it adds wear and tear to my car, trains haven't driven over this in 15 years, and they will never ride here again!! Have maintenance forces complete this work.	See comment 16 below regarding railroad.
12	2	Rosendahl	Hal	California Highway Patrol		You appropriately refer to this segment as Expressway. As memory serves me, there is a "Begin Freeway" sign on the first bridge as you leave Eureka. I've always been curious as to why this two lane highway is referred to as a Freeway. Do you know why this is? It's always puzzled me. It would be nice to know the real reason.	Responded to Sgt, via email
13	3	Stewart	Bonnie	Community Member		My husband and I are residents of Manila and have been for the last 5 years. We are very active people and love riding our bicycles however the dubious 255 stretch between Manila and Arcata has prevented me from riding my bike into town on a regular basis. Much of the highway has decent shoulders but other parts have little to no shoulder. Of course a separate bike path would be ideal but I would at least like to see bigger shoulders, or a divided shoulder with a bike lane	Widening portions of route that have narrow shoulders have been prioritized. As detailed in the report, bike path projects can be initiated as funding sources become available.
14		SAME	AS	ABOVE		..... and regular lighting along the highway. With these measures in place, I would feel much more comfortable biking to Arcata from my home.	Regular (standard) lighting is in place along the route. See Comment 8 regarding Dean intersection lighting.

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
15	4	Wiegand	Mike	Community Member		...anything you can do to separate motorized and non-motorized traffic with a concrete SAFETY barrier is the way to go..... my recommendations are; Segment one ,feature 1.5- uses existing pile and separates traffic. Segment two, feature 2.3- concrete SAFETY barrier. Segment three, feature 3.3- concrete SAFETY barrier. Segment four, feature 4.2 Hwy 255 has been a nightmare forever and this project should be embraced.	From the Study Report Att O: Feature 1.5 was determined to be infeasible. Feature 2.3 & 3.3 are problematic and are not recommended. Feature 4.2 will need a point of connection to a similar facility such as another agency developing a similar facility to connect with
16	5	Webb	John	Northern Humboldt	763 Stagecoach Rd. Trinidad, CA 95570	I hope in your planning for the improvements to Highway 255 between the Samoa Bridge and Arcata that Caltrans will be taking all reasonable measures possible to protect the operability of the North Coast Rail Authority's railroad crossings on that route. None of the crossings or rail lines are abandoned and there are active plans to resume service on this rail line. Please do not remove or pave over any tracks.	No improvements are proposed that will conflict with the railroad operations (present or future)
17	6	Ihara	Nancy	Community Member		As I mentioned at the meeting in Manila I am concerned about the entrance to Stamps Lane. I don't believe this is addressed in the report. If I read the collision section accurately the accidents at this location are above the norm. I feel strongly this road needs a turn lane and, also, would be better placed if it was further south along 255. The curve near Young Lane hampers visibility for both cars turning onto Stamps Lane and cars approaching it from the north.	Currently, none of the intersections without turn pockets have traffic volumes that justify a new turn pocket . The Stamps Lane intersection is the single entrance to the Friends of the Dunes and Humboldt Coastal Nature Center. In 2010, these organizations applied for an encroachment permit to add a new entrance to it's property. If this new entrance is installed the volume of traffic using the existing access opening will decrease dramatically. The new entrance would also address the comment regarding a more southern access point and will likely include turning lanes.

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
18		SAME	AS	ABOVE		There are many bikers who traverse 255. By and large the shoulders in Manila are adequate. There are some too narrow sections in the third segment. I strongly believe these should be widened. Of course it would be ideal having a bike lane on the Samoa Bridge but the cost probably prohibits this from happening soon. If I read the report correctly there is not too much difference in cost between providing bike II and bike III lanes. Bike II lanes are preferable because they clearly delineate where bikes should travel. I am happy that you are considering a bike/pedestrian III lane between Pacific and Lupin. Ideally this should be continued to Young Lane.	Widening the shoulders in Segment 3 is a priority. Cost and a lack of a funding source make addressing non-motorized improvements on the Samoa Bridge difficult. Class II and III bike lanes do have comparable costs. The report details some of the problems with implementing a Class II. Feature 2.2 extends between Dean/Pacific and Young Lane. Feature 2.1 extends southerly from Dean/Pacific to Peninsula.
19		SAME	AS	ABOVE		I suspect that colored shoulders would be very helpful, more so than landscaping and gateway monuments, in indicating to motorists that they are passing through a community.  I agree with people who spoke at the most recent meeting regarding the usefulness of reflectors at the Dean Avenue and Pacific Blvd. intersections. Perhaps they would be useful at Stamps Lane as well.  Eventually I hope Manila will have painted medians on 255 through town.	As part of an array of features, each element has some contribution.  Adding reflectors to highlight roadway limits at the Dean intersection is being investigated.  As detailed in the Report, painted medians would be expensive due to the need to widen the roadway to maintain the current standard widths. Funding may be difficult.

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
20	7	Butner	Chris	Green Wheels		<p>The following would be what I support for each project segment -</p> <p>Segment 1 - feature 1.3 : Seems like best option to reduce cost, and environmental impact. I would also non motorized travel be at same level as other road users. Certainly include a separation barrier to improve safety of non motorized travel from high automotive speeds.</p> <p>Segment 2 - feature 2.3 : I'd like to see barrier to separate non motor travel along entire route of segment 2. Retaining this uniform protected barrier look as much as possible.</p> <p>Segment 3 - feature 3.3 : continue separated pathway with barrier to tie in with segment 2.</p> <p>Segment 4 - feature 4.3 : Under current conditions I can bike with ease from K st to V st on both sides of road. Though I would rather not see a V st crossing eliminated. I would prefer the widened shoulder on both sides of roadway.</p> <p>Although I would like to see really good signage to caution auto traffic to be cautious with non motorized travel. Please enhance the bike lane with a colored lane such as a green lane, or red lane(since no barrier will be present). Similar to pic attachment included in email(red shoulder). I would also request rumble strip be installed as an extra layer to help alert road users if strip is crossed during travel.</p>	<p>Features 1.3 and 1.4 are most viable.</p> <p>As noted in the report Feature 2.3 and 3.3 has design and safety issues making them less viable than other concepts such as Feature 2.1 and 2.2.</p> <p>Segment 4: There is no proposal to eliminate the V Street crossing. The need for shoulder widening along some portions of this segment has been identified in the report.</p> <p>Signage would be included with installation of any bike lane improvements. Colorized shoulders are planned to be added to some facilities in the District. Depending on effectiveness, these features could be rolled out to other locations where appropriate. For this route, colorized shoulders are only proposed in Segment 2 at this time.</p>
21		SAME	AS	ABOVE		<p>I'm in full support of Manila transportation enhancements. The community deserves that road treatment as a road calming effect for better safety of non motorized travel. As well this falls in with complete streets policies as directed by the state.</p>	No response required

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
22	8	Daniels	Timothy	Community Member		<p>I'm not sure that I saw correctly; does your plan have bicycle traffic on only one side of the bridge? Please tell me this is not so.</p> <p>Are you aware how much more difficult and dangerous intersections are for cyclists to negotiate when you've separated them from traffic with a concrete barrier? Motorists are simply less aware of the cyclist's presence, so they will be more likely to turn in front of the them. I've had it happen in exactly this kind of situation. A car turned right into my path, but I was ready for it because I saw well ahead of time how bad an idea this is. The motorist's excuse? "I didn't see you." I'm guessing whomever is responsible for this nonsense does not ride a bicycle. I predict many more bicycle/automobile collisions (and we all know who always comes out ahead) if this plan is implemented. Perhaps you can find a way to reduce the likelihood of my getting hit, not increase it. The concrete barrier is a really, really bad idea.</p>	<p>This is a feasibility study and a full range of improvements were studied, including the pros and cons of bicycle traffic on one side of the Samoa Bridge.</p> <p>As detailed in the study, there are several issues with Feature 2.3 and 3.3 which makes their concept less viable relative to the other options.</p>
23		SAME	AS	ABOVE		<p>But yeah this IS a good idea. Both 4.3 and 3.1 are perfect!</p> <p>And THIS is a good idea too (picture of Feature 1.3)</p>	<p>Features 4.3 &amp; 3.1 are considered more feasible (Attachment O). Both Features 1.3 &amp; 1.4 are pier cap extension options. Feature 1.3 has a lesser score than 1.4 and therefore, is less preferred</p>
24	9	LaBranche	Lawrence	Community Member	3389 Mitchell Hts Dr Eureka, CA 95501	<p>I like the idea of implementing the roundabouts to slow down traffic. That should divert traffic to other routes.</p> <p>I hope bicycling improvements can be done as soon as possible.</p> <p>However I do not want the railroad affected. Timber Heritage Association uses the railroad from Samoa to Manila for public speeder rides. There are plans to extend the speeder rides, and run the tourist train all the way to Eureka.</p>	<p>No response required</p> <p>As funding becomes available.</p> <p>Railroad operation is not expected to be impacted by any of the proposed improvements</p>

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
25	10	Linnysuesla ter	Linda	Community Member		My husband, Charlie Gilbert support all safety improvements possible. We live on Peninsula drive in Manila and hope that we can have a safer transportation route via 255.	No response required
26	11	Conzelman n	Kirk	Community Member	Arcata, CA	<p>I've been commuting to work from Arcata to Eureka using highway 255 for 18 years. I travel between 6AM and 7Am, then return to Arcata between 4PM and 5PM Monday thru Friday. When the safety corridor was established on Highway 101 the traffic increased dramatically on Highway 255. Along with the traffic increase came the speeders and people passing illegally, like passing on double yellows, turn lanes and on the shoulder. The interesting thing is many of these motorist after making a unsafe illegal passes would then pull off into Manila. The increased CHP patrol has reduced these problems, but the section between Samoa Bridge and Emerson Mill still has its share of unsafe motorists. I have been traveling 55MPH and been passed on 3 occasions on my right. Two of these times the car then turned into Manila. I think the new signs have helped, the strips by the turn off have slowed traffic and the wider bike lanes have made cycling safer.</p> <p>But as I see it, we need to enforce existing laws. Roundabouts, stop signs or slower speed limits will not stop the handful of idiots that ignore the laws.</p>	Enforcement and greater CHP/Sherriff presence is part of the solution but is beyond Caltrans control. Roundabouts and stop signs could be effective in reducing the speeds in their vicinity, but these aren't feasible until other conditions are met. Caltrans will be monitoring the effectiveness of the features that were installed last fall(2012).

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
27	12	Carlson	Rita	Community Member	Manila, CA	<p>Thank you for the radar feedback signs and the various visual improvements to the roadway, which are particularly helpful when driving at night.</p> <p>If possible, a sign, with reflector material, indicating the turnoff onto the bayside of Peninsula (the turnoff after Lupin, going north toward Arcata) would be helpful. At night, particularly when foggy, I have missed that turnoff.</p> <p>I especially support implementing the Class I, Off-Roadway Paths (pages 18 and 19), gateway monuments (page 23), the landscaping improvements (page 24), and the crosswalk markings (page 28) as they would enhance drivers' awareness and appreciation that they are entering and traveling through a residential community with foot traffic.</p>	<p>No response required</p> <p>Forwarded to Traffic Safety</p> <p>Support of said features duly noted</p>
28	13	Dellas	Joy	Community Member		<p>1). Do the traffic speed monitors have a built in device that measures the numbers, speed and time of traffic?</p> <p>2). Is there a type of monitor that photographically records the same data above? It would be helpful to see the conditions that go along with the data, such as turning left onto 255 on a foggy morning during commute time. Sometimes buses and trucks go barreling down the highway during foggy commute times with no lights on, in such a way that if there was an accident it would be a major disaster. When you are turning left onto a side street such as Lupin, or turning left from a side street onto the highway, during low visibility conditions, sometimes all you can do is hope you hear the oncoming traffic and take your chances. To make things worse, the fog always seems to happen during commute times.</p> <p>3). Can we get some fog signage? Use Headlights in Fog - or some such wordage.</p>	<p>1) If referring to the radar feedback signs recently installed, the equipment is not equipped for such data collection</p> <p>2) there probably is an instrument with such capabilities but it wouldn't be much use in foggy conditions.</p> <p>3) comment forwarded to Traffic Safety</p>

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
29		SAME	AS	ABOVE		<p>4). Is there a cost analysis on the price of periodic willow eradication vs. root removal and/or covering them with a heavy layer of chips, gravel, or tar? The willows will always grow back unless they are removed. I call on a fairly regular basis when I see they are getting dangerous again.</p> <p>5). I don't quite understand why they didn't extend the tar a little wider going through the bottoms. It would have made bike/pedestrian travel a whole lot safer and it seems it would have been more cost effective to have done so at the time of the upgrade.</p> <p>6). I wonder if the signs are being stolen by homeless encampments. Both the 4x4s and the signs would be useful. I wonder if it would be cost effective or even possible to have a gps device/chip inset into a sign. At least you'd know where it went. Or maybe a wildlife camera somewhere that could snap a shot of the perp(s).</p>	<p>4) unfortunately, willow removal will be an ongoing maintenance need. Recent removal of vegetation at Dean/Pacific was done in cooperation between Caltrans, Humboldt County and the California Conservation Corp. Caltrans is aware of problem but advised community at last public meeting to keep these three informed of vegetation growth.</p> <p>5) The recent bonded wearing course project was funded through a highway maintenance program which doesn't allow for widening</p> <p>6) Sheriffs office has been notified and other measures are being taken to prevent further sign losses</p>

## COMMENT SUMMARY/RESOLUTION FORM

Event: Hum 255 Feasibility Study Public Comment Period

Date: January 22, 2013

Comment No.	Commenter No.	Last Name	First Name	Agency	Address	Comment	Comment Resolution
30	14	Hall	Jessica	Humboldt Baykeeper	Executive Director /Baykeeper Humboldt Baykeeper 217 E Street Eureka, CA 95501	<p>We urge you to focus on speed reduction measures; improved pedestrian crossings, including median refuge islands and other measures; and establishment of a separated trail.</p> <p>We believe that the resident stakeholders of Samoa and Manila, including groups such as Safe Paths, should drive the selection of improvements.</p> <p>Finally, we expect that as these improvements move forward, design will mitigate storm water runoff and minimize habitat impacts. We recommend exploring this mitigation through the design of road and path cross-sections, including the selection of paving materials and Best Management Practices such as bioswales; and focusing on reducing traffic speeds and increasing non-motorized traveler visibility to eliminate the need for road widening in sensitive habitat areas, while locating trail improvements to the greatest extent possible on available disturbed lands adjacent to 255, and through use of night illumination techniques consistent with the standards of the International Dark Skies Association.</p>	<p>These elements are the focus of the study.</p> <p>Members of the community have been involved in the development of this study and previous efforts at local levels. Their comments have been included in the study and their opposition/support have been integrated into both gauging of the goals of the community and prioritizing needs. The communities needs to develop a partnership with Caltrans, HCAOG and private organizations to accomplish driving the selection of the improvements.</p> <p>The intention of the Department is to firstly avoid, then minimize and lastly mitigate for impacts to sensitive areas. Best Management Practices for storm water and environmental resources are expected to be considered in the design stages of the proposed improvements.</p>

# **ATTACHMENT J**

## **PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT**



## PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT MEMO

### 1. Project Information

District 1	County Humboldt	Route 255	PM 0.0/8.3	EA 01-48940
<b>Project Title:</b> SR 255 Engineered Feasibility Study				
Project Manager Rex Jackman			Phone # (707) 441-5739	
Project Engineer Brian Simon			Phone # (707) 441-3935	
Environmental Office Chief/Manager Brandon Larsen			Phone # (707) 445-6410	
PEAR Preparer(s) Alyson Hunter			Phone # (707) 441-4542	

### 2. Project Description

#### Description of Work/Background

The State Route 255 (SR 255) Engineered Feasibility Study (EFS) evaluates two types of potential transportation improvements along this highway corridor located in Humboldt County. The first aspect is related to the needs of pedestrians and bicyclists traveling the highway between the Cities of Eureka and Arcata. These improvements are referred to as non-motorized traffic improvements in the EFS. The second aspect of the report focuses on transportation enhancements within the community of Manila. The improvements along the segment passing through the community have two objectives; 1) address multi-modal connections within the community, and 2) reduce the speed of traffic passing through Manila.

In the future and as funding sources are identified, the EFS will be used as a reference document to initiate programming for non-motorized and traffic calming improvements. The purpose of the Study is not to provide a single design concept for each transportation issue, but to investigate multiple solutions independently, relate them to the context of the corridor to ensure an appropriate fit and in the future, add improvements which will not impact those which have already been constructed. These design concepts will consider potential funding sources as well as engineering, environmental and the other constraints anticipated in implementing them. With this information having been previously considered, future planners and transportation agency partners will be able to more quickly assess which course

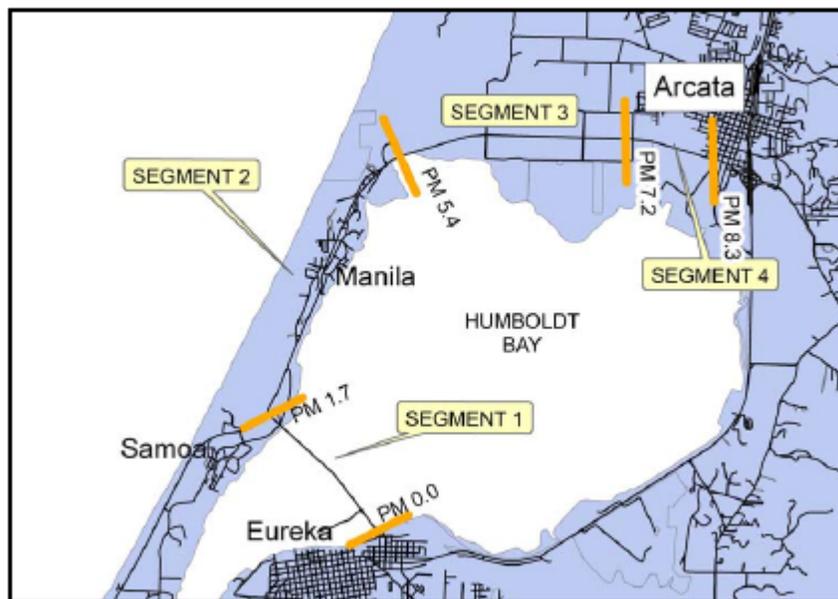
of action will serve the community and system most efficiently. After completion, this document will be used to assist Caltrans and other agencies in applying for funding.

### **Purpose and Need**

The purpose of this study is to evaluate the feasibility of, and a strategy for, pursuing potential improvements for non-motorized and traffic calming improvements within the existing state right of way along the SR 255 corridor. As part of that analysis, the potential environmental impacts, engineering feasibility and construction costs of the improvements have been evaluated.

This study will be used as a Caltrans' planning tool. The study will also be used to propose improvements that will address the public's concerns regarding changes in traffic volumes/speeds and pedestrian/bicyclists safety and mobility throughout the SR 255 corridor.

The map below depicts the four (4) segments that the EFS has been divided into. For the purposes of this PEAR document, segments 3 and 4 will be combined as the existing conditions and potential improvements are similar.



### **SR 255 PEAR Memo Format**

The PEAR addresses the current regulatory environment, permits needed and staff time/resources required to complete the environmental review per segment. Several options were identified for Segment 1 (Samoa Bridges), but only one feasible improvement option was further analyzed; Segment 2 has numerous community-based transportation enhancements as well as non-motorized transportation alternative; and Segments 3 and 4 are consolidated for the purpose of this review given their similar attributes and potential improvements. Because of the complexity and number of features identified in Segment 2, this document will address the 3 “worst case scenario” options, in terms of potential environmental impacts: a) roundabouts, b) Class I separated bike path, and c) a combination of multiple minor enhancements (gateway monuments,

landscaping, striping, etc.). Of the three of these potential improvements, the roundabout(s) would likely be the most challenging in terms of environmental impacts so that is the aspect of the Segment 2 improvements followed through this document.

**The following table contains a list of potential improvements for the Community of Manila as well as for Non-Motorized improvements for the entire length of the corridor.**

<b>Potential Manila Transportation Enhancements (Seg. 2) Intersections: Lupin Ave. (PM 3.94) and Pacific/Dean Ave. (PM 3.64)</b>		<b>Potential Non-Motorized Traffic Improvements (Corridor-Wide)</b>	
Gateway Monuments and Landscaping	PM 3.6 & 4.1	Class II or III (no separation), Deck Widening w/ Pier Cap Extensions	Segment 1
Painted Medians and Islands	PM 3.64/3.94	Class I, Contiguous to Roadway	Segments 2 and 3
Optical Speed Bars	PM 3.55/3.65 and PM 4.16/4.26	Class II or III Bikeway w/ Widened Shoulders	Segments 3 and 4
Radar Feedback Signs	PM 3.6 & 4.3 (currently underway as Safety project EA492301)	Class I, Off-Roadway using Lane Reduction	Segment 4
Colorized Shoulders	PM 3.54/4.16	Class I, Off-Roadway Path	Segments 2, 3 and 4
Curbed Medians and Islands	PM 3.64/3.94		
Safety Lighting	PM 3.64/3.94		
Roundabouts	PM 3.64 and/or 3.94		
Traffic Signal or Roundabout (Samoa)	PM 2.0		
Traffic Signals	PM 3.64 and 3.94		
All-Way Stop Signs	PM 3.64 and/or 3.94		
Pavement Marking (lane narrowing)	PM 3.6/4.1		
HAWK Crosswalk (Ped. activated signal)	PM 3.64 & 3.94		
Standard Crosswalk	PM 3.64 & 3.94		
Pedestrian Bridge	PM 3.64 & 3.94		
Bus Turnout	PM 3.79		

## **Segment Descriptions and Options**

### **Segment 1 – Samoa Bridges Non-Motorized Improvements**

In order to accommodate non-motorized (NM) users on the bridges, all three (3) structures would need to be widened to provide wider shoulders in both northbound and southbound directions of travel. These wider shoulders would be used for Class II or Class III bikeway and pedestrian traffic. With the widening, the shoulders on each side would be increased from their existing 5' widths to approximately 9'. The travel lanes could be increased from their existing 11' widths to the standard 12'. The existing barriers on each side would be replaced with standard barriers and would also include 54" high bike railing. To accomplish deck widening, the existing pier caps would be extended and new girders would be constructed to support the deck as shown below.

The centerline would remain in place. It is expected that all deck work and widening would be able to occur from the deck without any equipment in the water below. However, the bridge approaches would require some excavation for Metal Beam Guard Rail (MBGR) replacement.

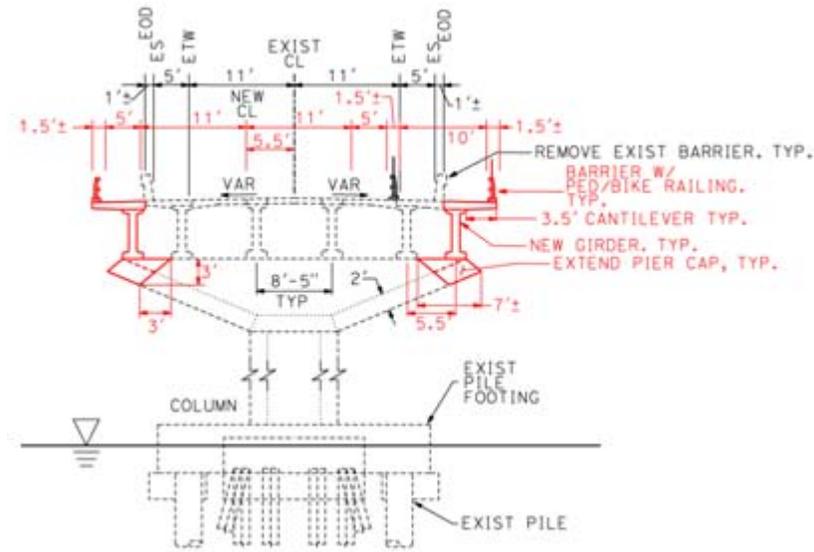


Figure 1

**Segment 2 – Manila Transportation Enhancements and NM Improvements**

a) Roundabouts at Lupin Avenue and Peninsula Blvd/Dean Ave. – Because of the scope of work involved with the installation of a roundabout, the environmental impacts of such an installation are more significant than the other intersection treatments described in the Engineered Feasibility Study (like a signal or all-way stop signs). Further, the degree to which impacts can be minimized by avoiding sensitive areas is limited because the locations of the roundabouts are predetermined by the existing intersections locations. If additional right-of-way (ROW) is needed to accommodate the space required for such an improvement (typically more space is needed for roundabouts than for traditional intersection treatments), acquisition costs as well as mitigation for potential impacts to wetlands, archaeological features or other sensitive habitat can increase the total cost and time required to obtain permits and regulatory review.

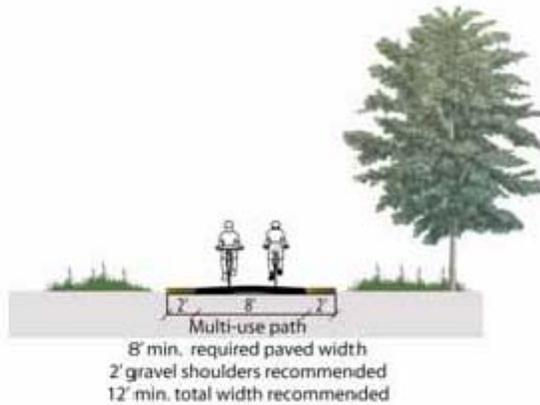


**Sample Roundabout**

b) Class I Separated Bike Path through Manila (PM 3.6/4.7) – the establishment of an off-roadway Class I bike path on the west side of SR 255 would be slightly less problematic than on the east (bay side) as the NCRA rail line is located between the highway and Humboldt Bay and, therefore, restricts the area for a trail – unless railbanking of the NCRA line around the bay occurred. Additionally, a considerable amount of the space between the highway and rail prisms have been inundated over the years and could be considered jurisdictional wetland.

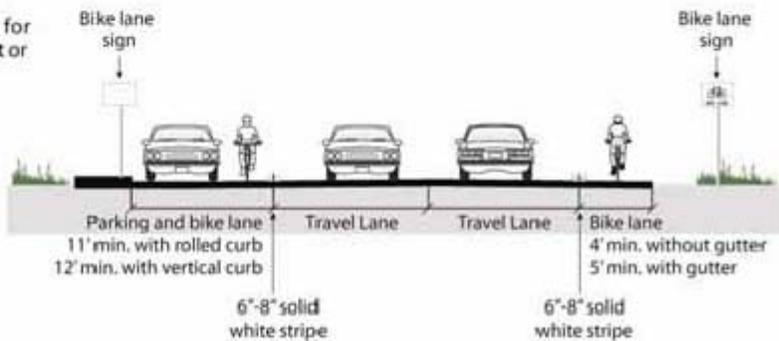
**CLASS I  
Multi-Use Path**

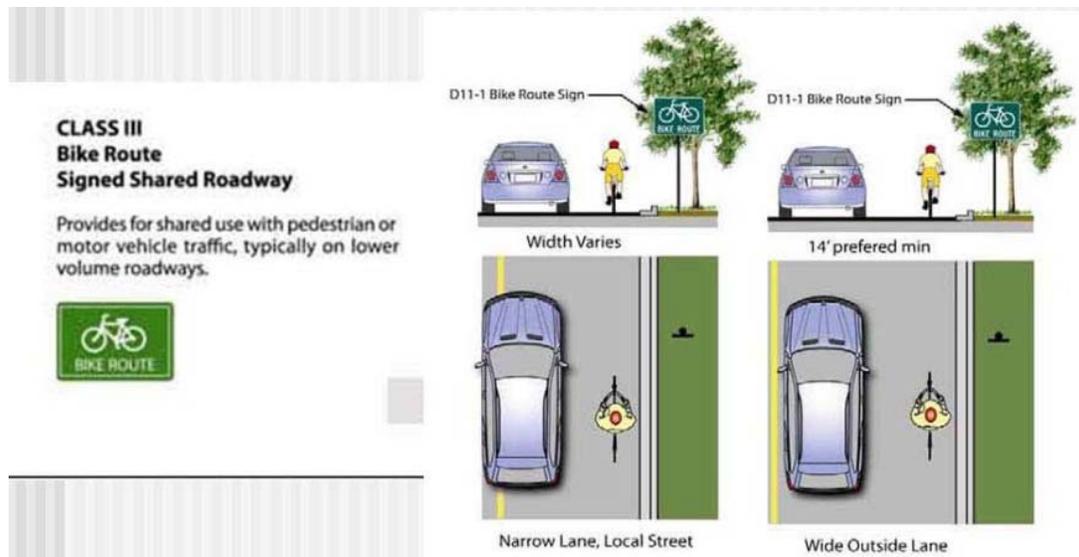
Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.



**CLASS II  
Bike Lane**

Provides a striped lane for one-way bike travel on a street or highway.





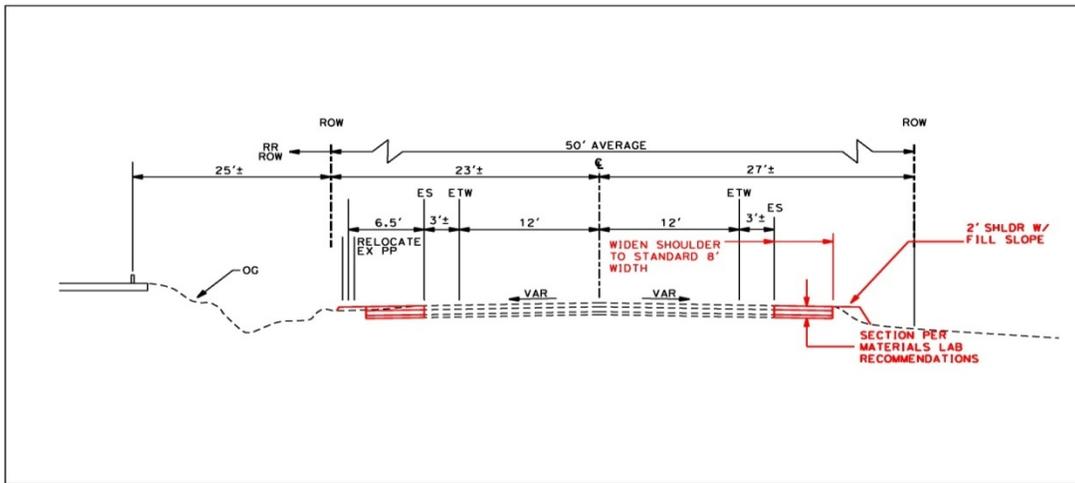
A separated path on the west or ocean-side could be more feasible, but not without potential wetland and archaeological impacts. The Friends of the Dunes non-profit is undertaking the development of a Class I separated path from their facility on Stamps Road (PM 4.45) to the terminus at PM 4.16, but there has been little progress on this effort over the past year. A continuation of this path south along the western side of the highway to the southern intersection of Peninsula Drive with SR 255 (PM 2.89) may be feasible.

c) Combination of Smaller Enhancements – This grouping of projects reflects minimal disturbance and, therefore, minimal environmental impact.

1. Gateway Monuments, Landscaping, Lighting (2 locations). Note: treatments would need to be located outside the Clear Recovery Zone (CRZ) which is a min. 30'
2. Painted Medians/Islands
3. Optical Speed Bars
4. Radar Feedback Signs (01-492301)
5. Colorized Shoulders (see 01-0B700 for recent information on colorized shoulders)

**Segments 3 & 4 – NM Improvements – Class II or Class III Shoulder Improvements**

Shoulder widening to standard 8 foot width on both sides of the highway would be the likely outcome of improvements for non-motorized users through these two segments given wetland, ROW, utility and railroad constraints. Segment 4 already has a significant stretch of 8' shoulders and would only require  $\pm 900'$  of additional improvement.



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### Class II, Widened Shoulders

#### 3. Anticipated Environmental Approval

Given the varied nature of the Segment Improvements listed above and taking into consideration that several Segment Improvements could be developed in concert, describing the type(s) of Environmental Approval needed is difficult. For the Segment Improvements likely to have the greatest environmental impact through wetland fill and archaeological or biological/habitat disturbance (acquiring additional ROW to develop roundabouts, significant widening of the roadway, Coastal resources, etc.), full CEQA/NEPA review would be anticipated resulting in, at a minimum, a Mitigated Negative Declaration (CEQA) and Categorical Exclusion or Finding of No Significant Impact (NEPA), but likely requiring both an EIR and possibly an EIS, should potential impacts become significant and unavoidable.

Segment 1 - It should be noted here that, for the Humboldt Bay Bridges Seismic Substructure Retrofit project, Caltrans certified an EA/FONSI (March 2002, EA 01-296701) and found the project statutorily exempt from CEQA per §180.2 of the CA Streets and Highways Code. Since the potential Segment 1 NM Improvements may be able to occur from the bridge deck without any water surface or subsurface disturbance, it is possible that upgrades could again be completed utilizing an Categorical Exemption (CE), but since the project would no longer be statutorily exempt from CEQA under the seismic retrofit exemption, likely a Negative Declaration would be required unless work on the approaches and ramps were considered to be insignificant in terms of wetland disturbance.

Segment 2 - The improvements with the greatest impact potential in Segment 2 are the roundabouts at Peninsula and Lupin and the Class I separated path. Both the roundabouts and the Class I bike path, depending on which side of the highway the bike path is located on (bay side

versus the ocean side), could require an Environmental Impact Report/EA (EIR/EA) because of the potential archaeological impacts and wetland fill and mitigation that would be involved. Several of the smaller scale Segment Improvements could be undertaken under one project and be minor enough in their potential impacts to require only a Categorical Exemption/Categorical Exclusion (CE/CE). For the smaller projects, narrowing the support costs based on known conditions in the field would be more practical than creating a new, more detailed, PEAR for each project.

Segments 3 and 4 – The Class II shoulder widening to 8’ through Segments 3 and 4 would be the improvement with the greatest potential impact due to wetland, highway and railroad ROW, and utility constraints. Shoulder widening along this Segment would likely require the preparation of an ND/EA.

Note #1: In terms of staff time for environmental review, the option for a programmatic environmental document exists wherein a variety of large- and small-scale improvements are thoroughly analyzed for impacts and mitigation measures adopted even though construction of these improvements may not occur within the immediate term. A term would need to be identified in the document and analyses refreshed if the term is exceeded.

Note #2: In the event that the NCRA were to allow a Rail-to-Trail project on their line along this corridor, time and cost for permitting and environmental review would be drastically minimized.

**4. Special Environmental Considerations**

State Route 255, lies between the cities of Eureka and Arcata, running roughly parallel to US 101, and passes through the unincorporated community of Manila. It is located within the California coastal zone and within the traditional lands of the Wiyot Indians. The highway is located on a ½ mile wide peninsula of land that separates Arcata Bay (the northern portion of the greater Humboldt Bay) from the Pacific Ocean. These areas, in addition to other sensitive biological resources known to inhabit the region, create a challenging permitting and development environment for Caltrans. The corridor consists of coastal dune habitat and includes native dune plants and invasive grasses and shrubs, non-prime farmed wetlands (agricultural lands), jurisdictional wetlands and tidelands.

In 2002, Caltrans certified an EA/FONSI for the Samoa Bridges Seismic Retrofit project with eelgrass mitigation requirements that are still ongoing. In 2007, a PEAR was prepared for a District-wide MBGR project (EA 01-46390K), including locations on SR 255, wherein a Negative Declaration/CE would be prepared. Although the PEAR addressed many sites, it identified that significant Cultural Resource and Native American Coordination technical review would be required and the same can be assumed for any of the projects discussed in this EFS. In February 2012, a CEQA CE was certified for the placement of two (2) radar feedback signs at postmiles 3.3 and 4.7 within the ROW. These locations were picked in an effort to minimize potential impacts to sensitive habitat areas thus resulting in a CE.

Special Environmental Considerations	Segment 1	Segment 2	Segment 3/4
Wetlands/Coastal Resource	Possibly at ramp approaches	Yes	Yes
Section 4(f)	No	No (possibly NWPRR)	Yes (CA State Univ.

			Trust)
Public Lands	No	Yes (Tribal)	No
Wild & Scenic Rivers	No	No	No
Fish Passage	No	No	No
Agricultural Lands	No	No	Yes
Biological Resources (Fed. and/or State lists)	Possibly at ramp approaches	Yes (see EA492301)	Yes (if slough crossings required to be replaced or extended)
Historic Resources	No	Yes (NWPRR)	Yes (NWPRR)
Cultural Resources	Possibly at Indian Island	Yes	Possibly

Wetland and other coastal resources affected by the project components would require mitigation.

Section 4(f) – There are two parcels owned by the CA State Universities Trust adjacent to the highway on the east side of Mad River Slough bridge and several parcels owned by CA Dept. of Fish & Game on the south side of the highway, but not adjacent. There is no indication that the segment improvements discussed in the EFS would significantly, either permanently or temporarily, impact these lands or the publics’ ability to access and enjoy them.

Segments 2 and 3/4 - The Northwestern Pacific Railroad (NWPRR) has been determined eligible for the National Register of Historic Places; crossings near postmiles 0.2, 1.8, 4.9 and 8.25 would need to be evaluated for elements that may contribute to the National Registry property. Likewise, any elements of the NWPRR paralleling 255 that become affected by any development projects would need to be evaluated similarly. Additionally, impacts to this resource, if deemed significant, could trigger 4(f) review.

Public Lands – Other than those lands mentioned in the above section, the project area is not adjacent to public lands. One parcel in Segment 2 is in the process of becoming a Tribal Trust property. Any projects requiring ground disturbance between PMs 0.5/7.75 should assume extensive consultation with the Blue Lake Rancheria, the Wiyot Tribe and the Bear River Band of the Rohnerville Rancheria.

Wild & Scenic River – there are no designated Wild & Scenic Rivers within the SR 255 corridor.

Fish Passage – Given the low elevation of the highway and its proximity to the bay, the potential for barriers to fish passage are relatively low. However, any bridge or culvert replacement required by Segment Improvements would automatically trigger an analysis under SB 857.

Agricultural Lands – Humboldt County participates in the Williamson Act and two (2) parcels, one on the north side and the other on the south side of the highway between the Mad River Slough and PM 7.0, are in agricultural preserve. These parcels do not contain prime agricultural soils.

**Biological Resources:**

Federally Listed Threatened and Endangered Species – See **Attachment E** for a full listing of federally listed species, critical habitat and species status for the Eureka Quad.

All of coastal Northern California, Oregon and the Columbia River watershed are listed by the National Oceanic and Atmospheric Administration (NOAA) Fisheries as containing critical habitat for coho salmon. McDaniel Slough, Mad River Slough and Liscom Slough and other smaller tributaries to Arcata Bay may contain habitat for fish or amphibian species of concern or special status. If federally listed species of threatened or endangered status are affected by any aspect of the project(s), then Section 7 consultation with NOAA Fisheries and/or USFWS would be required. A consistency finding from California Dept. of Fish and Game (DFG) may be necessary if any component resulted in impacts to coho salmon and would occur after NOAA prepared a Biological Opinion (BO) or Letter of Concurrence for a Not-Likely-to-Adversely-Affect Determination (NLTA). A Natural Environment Study (NES) may be required to identify existing conditions and habitat values. NOAA consultation would also include Essential Fish Habitat (ESH). If no work is to occur within or over the water, then no consultation would be required.

State Listed Special Status Species – See **Attachment F** for a full listing of state listed and special status for the Eureka Quad.

Migratory Nesting Birds – An avian survey shall be conducted prior to any vegetation removal. If any active nests are detected, then appropriate buffers would be established and would remain in place until fledglings have vacated the nest. If no nests are present, minimal vegetation removal can proceed. All vegetation trimming and/or tree removal must occur outside the nesting season (Sept. 1 – March 1). If necessary, the Natural Environment Study mentioned above would also address any project impacts to nesting birds covered under the Migratory Bird Treaty Act (MBTA).

Special Status Species - State and federal consultation/consistency findings must occur to determine the most appropriate treatment for special status species if any are expected to be found and impacted within the project area. Because of environmental work completed for a previous project in Segment 2 (EA 492301), there are known to be several different plant species of concern or special status species in the area. A Botanical Study as part of the NES will need to take place in order to identify any of these species listed within the project area. While conducting recent (2011) botanical surveys for the radar feedback sign project (EA 492301), a yellow warbler was identified in a willow thicket adjacent to the roadside. Yellow warblers are listed as Species of Special Concern with DFG. Furthermore, two (2) plant Species of Special Concern are known to exist within Segment 2: beach layia and Humboldt Bay wallflower. If these or any other species of concern or special status are to be negatively impacted by any of the project components, consultation with DFG and an appropriate mitigation site and plan may be required.

Wetlands – All Segments, but primarily 2 and 3/4, contain wetlands. The roadside ditches on both sides of the road have potential for being classified as jurisdictional (US Army Corps of Engineers and Coastal Commission) wetlands. Any work within the roadside ditches may fall under the jurisdiction of the Army Corps and Coastal Commission as well as DFG and the

Regional Water Quality Control Board. There are also areas beyond the roadside ditches that may have wetland characteristics. These areas would need to have a wetland delineation conducted to make a determination as to whether or not they qualify as jurisdictional wetlands. If any temporary or permanent impacts to wetlands are necessary, an appropriate mitigation plan would be required.

**Cultural and Historical Resources:**

Within the entirety of the corridor, there are 15 known prehistoric archaeological resources. Because most of these sites are not precisely mapped, work in the vicinity of any of them will require extended Phase I excavations to determine the extent of the resource.

Segments 2 and 3/4 - The Northwestern Pacific Railroad (NWPRR) has been determined eligible for the National Register of Historic Places; crossings near postmiles 0.2, 1.8, 4.9 and 8.25 would need to be evaluated for elements that may contribute to the National Registry property. Likewise, any elements of the NWPRR paralleling 255 that become affected by any development projects would need to be evaluated similarly. Additionally, impacts to this resource, if deemed significant, could trigger 4(f) review.

Consultation with Blue Lake Rancheria, the Wiyot Tribe and Bear River Band will be required for any work on the bridges and along the entire length of the corridor with special consideration to specific locations within Segment 2.

**5. Anticipated Environmental Commitments**

For each of the Segment Improvements described previously in this document, the following environmental commitments may be anticipated. As this PEAR Memo is being prepared for an Engineered Feasibility Study and none of the Segment Improvements have been chosen for development, none of the potential commitments are concrete. This should be noted in reference to the Estimated Resources by WBS Code Cost Estimates as well. Reference PEAR Environmental Commitments Cost Estimate.

The following commitments may be required for work in all the Segments:

<b>Anticipated Environmental Commitments</b>	<b>Segment 1</b>	<b>Segment 2</b>	<b>Segment 3/4</b>
Vegetation clearing and possibly construction may have to take place outside nesting season (Sep. 1 – March 1) for migratory birds depending on avian survey results.		√	√
ESA fencing would be needed to protect rare plant species near the staging and work areas if such populations are found to be located within the project area. If these species are impacted as a result of the project then mitigation efforts would need to occur.	√	√	√
Native American Monitoring will occur.	√	√	√
Wetland impacts would need to be mitigated.	√	√	√
Work windows and/or other mitigation may be necessary when working on bridges/culverts associated with listed species.	√	√	√

## **6. Permits and Approvals**

See **Attachment C** – Summary of Permits & Estimated Timeframes for SR 255 EFS

## **7. Level of Effort: Risks and Assumptions**

### **Cultural and Historic Resources**

Segment 1 Expenditure Estimate – 1,568 hours = 0.90 PYs

Segment 2 Expenditure Estimate – 1,576 hours = 0.90 PYs

Segment 3/4 Expenditure Estimate – 1,576 hours = 0.90 PYs

This estimate does not include mitigation costs for prehistoric or historic archaeology. Concurrence from the SHPO and THPO, as well as public comments on treatment of the historic landscape may push this number to over 0.90 PY.

See **Attachment B** for more details.

### **Biological Resources**

Segment 1 Expenditure Estimate – 1,108 hours = 0.63 PYs

Segment 2 Expenditure Estimate – 1,276 hours = 0.72 PYs

Segment 3/4 Expenditure Estimate – 1,276 hours = 0.72 PYs

This estimate does not include mitigation costs for wetland or other impacts. Concurrence from NOAA Fisheries and the California Coastal Commission would most likely increase the amount of PYs attributed to this portion of the project. Additionally, any culvert replacement where fish passage has been hindered would require remediation under SB 857.

See **Attachment B** for more details.

## **8. PEAR Technical Summaries**

**Land Use:** The corridor passes through three (3) separate types of land use; 1) agricultural/grazing/open space, 2) suburban residential, and 3) maritime/bay.

The ROW through the project corridor varies significantly from 40' width at the City of Eureka beginning of Segment 1 to 140' width in Segment 2 to only 50' through Segment 3. Although the ROW in Segment 3 is very narrow, the scope of this Study was to focus on improvement opportunities within the existing ROW. Given the expansive width of the ROW through Manila, even the development of roundabouts at the major intersections could likely be accommodated.

Temporary construction easements may be required for some Segment Improvements like those within Segments 3 and 4 if additional ROW in those areas is not acquired.

There are utilities that would need to be moved as a result of this project, most critically in Segments 3 and 4 where facilities are adjacent to the road. Depending on how the project is to be constructed, these facilities may need to be relocated. These utility relocations would need to be taken into consideration in the technical studies.

The NWPRR line (owned by NCRA) also runs along the 255 corridor; it crosses from the north side to the southeast side just west of the Mad River Slough bridge at the sawmill. The proximity of the RR to the highway ROW significantly constrains expansion of the travel way, especially through Segments 3 and 4. For work in Segments 2 and 3/4, a temporary construction easement from NCRA may be necessary.

**Growth:** None of the Segment improvements would result in an increase in highway capacity; they would not be considered growth-inducing.

**Farmlands/Timberlands:** Humboldt County does participate in the Williamson Act Program and there are two (2) properties adjacent to Segment 3 that are under contract. There is no indication that any of the Segment improvements could impact these contracts unless additional ROW was required and these properties were diminished to a size below their current contract. Portions of these two parcels contain Prime Ag soils. There are no timberlands in the immediate vicinity of the corridor.

**Community Impacts:** The project is not expected to have any substantial adverse effects on the local community or economy. In fact, the purpose and need of the EFS comes from the community's concerns about traffic speed and the livability of their community in terms of the State highway as their community's *mainstreet*. None of the Segment improvements through Manila would cut off or change existing access to or from the expressway.

**Visual/Aesthetics:** An above-grade pedestrian crossing would have the greatest visual impact with intersection treatments like roundabouts or signals coming in second. Roundabouts can be landscaped or can include art pieces making them an aesthetically pleasing addition to the intersection. The NM Segment Improvements would not create a significant impact in terms of visual resources and the corridor's aesthetic. Coordination with Coastal Commission staff regarding visual resources would be required.

Vegetation removal, signage and lighting would need to be assessed and minimized where possible to reduce the effect on the visual setting. New landscaping treatments shall utilize native plants in an effort to minimize maintenance and irrigation needs.

Architectural elevations shall be provided for options that include significant above-grade structural work like over-crossings, interchanges and roundabouts. Before and after photo simulations shall be provided that accurately depict the proposed feature's potential impact on the landscape.

**Cultural Resources:** Most of the Segment Improvements, especially those in Segments 2, 3 and 4, would require the preparation of both an Archaeological Survey Report and a Historic Property Survey Report. There are significant known cultural resources within the corridor.

**Hydrology and Floodplain:** All of Segments 3 and 4 fall within the 100-year floodplain as does a portion of the south end of Segment 2. A Location Hydraulic Study and summary floodplain encroachment report would be required for work within the 100-year flood zones.

A Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) would be required if the proposed project is deemed to affect the hydrologic and/or hydraulic characteristics of the existing regulatory floodway or effective Base Flood Elevations. It does not appear that any of the Segments are located within a mapped FEMA Floodway.

**Water Quality and Storm Water Runoff:** The site will be evaluated for potential water quality impacts associated with each option. If site dewatering is required for new construction at crossings, a dewatering plan would be required. Increases in impervious surface (e.g., road widening for bike lanes, for example) may require mitigation to be approved by RWQCB. Runoff impacts should be mitigated on-site, as feasible, and through project design and Best Management Practices (BMPs).

**Geology, Soils, Seismic and Topography: NA**

**Paleontology: NA**

**Hazardous Waste/Materials:** Depending on the option and the extent of ground disturbance expected, either a Preliminary Site Investigation (PSI) or an Initial Site Assessment (ISA) would be required. The project areas are not included on the *Hazardous Waste and Substances Site List (Cortese List)*.

**Air Quality:** Humboldt County is a non-attainment area. Air quality issues having to do with site preparation and construction (dust and other fugitive particles) will be addressed in the environmental document.

**Noise and Vibration:** Noise impacts associated with construction could impact humans or other sensitive biological receptors within ¼ mile of the project location. Listed or special status wildlife species could be especially affected should any be identified within the construction zone. For a previous project in the area, a yellow warbler was observed. Yellow warblers are a Species of Special Concern with the California Department of Fish and Game. No nests were identified in the survey completed for a previous project (EA 492301). These potential impacts would be analyzed for all of the larger-scale build options. It is unlikely that pile driving would be required in any of the options. Temporary construction-related noise impacts to residents in the area may be significant; there are residents within 50' of some of the improvement locations. A Noise Study may be required and would address potential impacts to both wildlife and human residents in the vicinity. Given that Segment 2 is the only of the 3 segments that includes nearby residential development, further study would likely only be required for work within that segment.

**Energy and Climate Change:** Because all of the options are operational and/or safety-related rather than growth or capacity increasing, there is limited potential for any of them to result in a significant increase in greenhouse gas emissions. However, this analysis would be made more thoroughly through the environmental review process.

**Biological Environment:**

Each of the options could impact sensitive habitats, threatened or endangered species and/or species of concern or special status. Permits would be required for impacts to jurisdictional waters and wetlands. Section 7 Consultation for impacts to federally listed species could be warranted.

**Cumulative Impacts: NA**

**Context Sensitive Solutions:** Community input will contribute to the development of designs for signage, landscaping, lighting, pavement features and roadway markings, where feasible.

**9. Summary Statement for Engineered Feasibility Study**

The purpose of this study is to evaluate a full range of potential improvements within the State right of way.

**10. Disclaimer**

This Preliminary Environmental Analysis Report (PEAR) Memo provides information to support programming of one of or a combination of several of the Options described herein. As of this writing, no Option has been selected for programming or construction. It is not an environmental determination or document. Preliminary analysis, determinations, and estimates of mitigation costs are based on the project description provided in the Engineered Feasibility Study (EFS). The estimates and conclusions in this PEAR Memo are approximate and are based on cursory analyses of probable effects. A reevaluation of the PEAR will be needed for changes in project scope or alternatives, or in environmental laws, regulations, or guidelines.

The studies required and consultations that have occurred to date are based on the Segment Improvements that are shown in this PEAR Memo. Additional studies or consultations may be warranted if changes in the Segment Improvements occur.

**11. List of Preparers**

Cultural Resources specialist Barry Douglas	Date: 12/29/11
Biologist Katie Thoreson	Date: 3/07/12
Community Impacts specialist NA	Date:
Noise and Vibration specialist NA	Date:
Air Quality specialist NA	Date:
Paleontology specialist/liaison NA	Date:
Water Quality specialist Alex Arevalo	Date: 3/09/12
Hydrology and Floodplain specialist	Date:

NA	
Hazardous Waste/Materials specialist Steve Werner	Date: 2/24/12
Visual/Aesthetics specialist NA	Date:
Energy and Climate Change specialist NA	Date:
Other: NA	Date:
PEAR Preparer (Name and Title) Alyson Hunter (Associate Transportation Planner)	Date: 3/29/12

**12. Review and Approval**

I confirm that environmental cost, scope, and schedule have been satisfactorily completed and that the PEAR meets all Caltrans requirements. Also, if the project is scoped as an EA or EIS, I verify that the HQ DEA Coordinator has concurred in the Class of Action.

\_\_\_\_\_  
Brandon Larsen, Senior Environmental Planner

Date:

\_\_\_\_\_  
Rex Jackman, Project Manager

Date:

**REQUIRED ATTACHMENTS:**

- Attachment A: PEAR Environmental Studies Checklist
- Attachment B: Estimated Resources by WBS Code
- Attachment C: Summary of Mit. Costs/Permits/Consultations/Timelines
- Attachment D: PEAR Environmental Commitments Cost Estimate (Standard PSR)
- Attachment E: USFWS Threatened & Endangered Listing (Eureka Quad)
- Attachment F: CA Natural Diversity Data Base (DFG) Listing (Eureka Quad)
- Attachment G: CA Native Plant Society Inventory of Rare/Endangered Plants (Eureka Quad)

## Attachment A: PEAR Environmental Studies Checklist

Rev. 11/08

<b>Environmental Studies for PA&amp;ED Checklist</b>					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Growth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Farmlands/Timberlands	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Community Impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	Segment 2
Community Character and Cohesion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Relocations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Environmental Justice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Utilities/Emergency Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Visual/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	Seg. 1 and 2
Cultural Resources:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
Archaeological Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	2 and 3/4
Historic Resources Evaluation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	2 and 3/4
Historic Property Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	2 and 3/4
Historic Resource Compliance Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	2 and 3/4
Section 106 / PRC 5024 & 5024.5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	All Seg.
Native American Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>H</u>	All Seg.
Finding of Effect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	2 and 3/4
Data Recovery Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Memorandum of Agreement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Hydrology and Floodplain	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	2 and 3/4
Water Quality and Stormwater Runoff	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
Geology, Soils, Seismic and Topography	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Paleontology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
PER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
PMP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Hazardous Waste/Materials:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	2 and 3/4
ISA (Additional)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
PSI	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	2 and 3/4
Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Air Quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Noise and Vibration	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	Seg. 2
Energy and Climate Change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Biological Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
Natural Environment Study	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
Section 7:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	
Formal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	
Informal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	
No effect	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	All Seg.
Section 10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
USFWS Consultation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	2 and 3/4
NMFS Consultation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	2 and 3/4
Species of Concern (CNPS, USFS, BLM, S, F)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Wetlands & Other Waters/Delineation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
404(b)(1) Alternatives Analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Invasive Species	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	2 and 3/4
Wild & Scenic River Consistency	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Coastal Management Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
HMMP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	2 and 3/4
DFG Consistency Determination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	2 and 3/4
2081	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>M</u>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Cumulative Impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Context Sensitive Solutions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Section 4(f) Evaluation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
<b>Permits:</b>					
401 Certification Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	All Seg.
404 Permit Coordination, IP, NWP, or LOP	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
1602 Agreement Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	All Seg.
Local Coastal Development Permit Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	All Seg.
State Coastal Development Permit Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>M</u>	Seg. 1
NPDES Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
US Coast Guard (Section 10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	Seg. 1
TRPA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
BCDC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	

ATTACHMENT B2 - Resource Hours by WBS Code

EA: 01-0B030

Description: 255 Feasibility Study Segment 1

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
Assigned Unit					275	275		292	275		
<b>Project Management</b>											
100.10.05 - PA&ED Init. & Ping.											4
100.10.10 - PA&ED Exec. & Ctrf.											-
100.10.15 - PA&ED Closeout											-
100.10.20 - PA&ED Project Shelving											-
100.10.25 - PA&ED Project Unshelving											-
100.10.30 - PA&ED Update Admin Record											-
100.10.35 - PA&ED Cooperative Agreement											-
100.10.99 - PA&ED Other Proj. Mgmt. Products											-
100.15.05 - PS&E Init. & Ping.											-
100.15.10 - PS&E Exec. & Ctrf.											-
100.15.15 - PS&E Closeout											-
100.15.20 - PS&E Project Shelving											-
100.15.25 - PS&E Project Unshelving											-
100.15.30 - PS&E Update Admin Record											-
100.15.35 - PS&E Cooperative Agreement											-
100.15.99 - PS&E Other Proj. Mgmt. Products											-
100.20.05 - Const. Init. & Ping.											-
100.20.10 - Const. Exec. & Ctrf.											-
100.20.15 - Const. Closeout											-
100.20.20 - Const. Project Shelving											-
100.20.25 - Const. Project Unshelving											-
100.20.30 - Const. Update Admin Record											-
100.20.35 - Const. Cooperative Agreement											-
100.20.99 - Const. Other Proj. Mgmt. Products											-
100.25.05 - RW Init. & Ping.											-
100.25.10 - RW Exec. & Ctrf.											-
100.25.15 - RW Closeout											-
100.25.20 - RW Project Shelving											-
100.25.25 - RW Project Unshelving											-
100.25.30 - RW Update Admin Record											-
100.25.35 - RW Cooperative Agreement											-
100.25.50 - RW Ex. Coop. Agree. Relinquish											-
100.25.99 - RW Other Proj. Mgmt. Products											-
Total Project Management						4					4
<b>Preliminary Engineering Studies and Draft Project Report</b>											
160.05.05 - Approved PID Review	1	1									6
160.05.10 - Geotechnical Information Review											-
160.05.20 - Traffic Data & Forecasts Review											-
160.05.30 - Project Scope Review	1	1									2
160.05.99 - Other Updated Project Info Products											-
160.10.20 - Value Analysis											-
160.10.25 - Hydraulics/Hydrology Study											-
160.10.30 - Hwy Planting Design Concepts											-
160.10.40 - Updated Right of Way Data Sheets											-
160.10.99 - Other Engineering Studies											-
160.15.20 - Draft Project Report	1	1									6
160.15.25 - Draft PR Circ., Review & Approval	2	2									4
160.30.05 - Maps for ESR	1	1									2
160.30.10 - Surveys & Mapping for ESR											-
160.30.15 - Prop. Access Rights - Env/Eng Studies											-
160.40 - NEPA Delegation											-
Total Pre. Eng. Studies & Draft PR	6	6				8					20

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Environmental Studies and Draft Environmental Document - Task Management Activities</b>											
165.05.05 - Project Information Review	2	4	4	4							14
165.05.10 - Pub & Agency Scoping Process	2	4	4	4							14
165.05.15 - Alternatives for Further Study											-
165.05.99 - Other Env Scoping Alt ID in PID											-
165.10.15 - CIA, Land Use & Growth Studies											-
165.10.20 - VIA & Scenic Resource Evaluation	4	8								160	172
165.10.25 - Noise Study											-
165.10.30 - Air Quality Study											-
165.10.35 - Water Quality Studies						60					-
165.10.40 - Energy Studies			4								64
165.10.45 - Summary Geotech Report											-
165.10.50 - Hazardous Waste PSI											-
165.10.55 - Draft RW Relocation Impact Doc.					40						40
165.10.60 - Loc. Hyd. & Floodplain Study Rpts.			4								-
165.10.65 - Paleontology Study											-
165.10.70 - Wild and Scenic Rivers Coordination											-
165.10.75 - Environmental Commitments Record			4								4
165.10.99 - Other Environmental Studies	4	8	80								92
165.15.05 - Biological Assessment			8								88
165.15.10 - Wetlands Study			80								120
165.15.15 - Resource Agcy Permit Related Coord		40	80								172
165.15.20 - NES Report	4	8	160								24
165.15.99 - Other Biological Studies			4	20							-
165.20.05 - Archaeological Survey											-
165.20.05.05 - APE/Study Area Map(s)			4	24							28
165.20.05.10 - Native American Consultation	4	4		40							48
165.20.05.15 - Records & Literature Search				24							24
165.20.05.20 - Field Survey				40							40
165.20.05.25 - ASR				160							160
165.20.05.99 - Other Archy Survey Products				20							20
165.20.10 - Extended Phase I Archy Studies											-
165.20.10.05 - Native American Consultation				40							40
165.20.10.10 - Extended Phase I Proposal				24							24
165.20.10.15 - Extended Phase I Field Inv.				80							80
165.20.10.20 - Extended Phase I Mat. Analysis				24							24
165.20.10.25 - Extended Phase I Report				40							40
165.20.10.99 - Other Ext Phase I Archy Prod				24							24
165.20.15 - Phase II Archy Studies											-
165.20.15.05 - Native American Consultation											-
165.20.15.10 - Phase II Proposal											-
165.20.15.15 - Phase II Field Investigation											-
165.20.15.20 - Phase II Materials Analysis											-
165.20.15.25 - Phase II Report											-
165.20.15.99 - Other Ext Phase II Archy Study											-
165.20.20 - Hist & Architect Resource Studies											-
165.20.20.05 - Prelim APE/SAM for Arch.											-
165.20.20.10 - HRER - Archaeology											-
165.20.20.15 - HRER - Architecture											-
165.20.20.20 - Bridge Evaluation											-
165.20.20.99 - Other Hist and Arch Resource Prod											-
165.20.25 - Cultural Res. Comp. Cons. Docs.											-
165.20.25.05 - Final APE/Study Area Maps				40							40
165.20.25.10 - PRC 5024.5 Consultation				80							80
165.20.25.15 - HPSR/HRCR				160							160
165.20.25.20 - Finding of Effect (FOE)				120							120
165.20.25.25 - Archy Data Rec. Pln./Treat. Pln											-
165.20.25.30 - MOA				80							80
165.20.25.99 - Other CR Compliance Consult Prod				24							24
165.25.05 - DED Analysis	16	80	16	16						8	136
165.25.10 - Section 4(f) Evaluation	8	120									128
165.25.15 - CE/GE Determination											-
165.25.20 - Env. Quality Ctrl. & Other Reviews	8	8	8	8		8				8	48
165.25.25 - Approval to Circulate Resolution	8	8									16
165.25.30 - Environmental Coordination											-
165.25.99 - Other Draft ED Products	8	16									24
165.30 - NEPA Delegation	2	16	2	2							22
Total Environmental Studies & DED	70	348	458	1,078	40	68				176	2,238

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Permits, Agreements, and Route Adoptions during PA&amp;ED Component - Task Management Activities</b>											
170.05 - Required Permits											
170.10.05 - USACE Permit (404)	4	4	4								12
170.10.10 - US Forest Service Permit(s)											-
170.10.15 - US Coast Guard Permit											-
170.10.20 - DFG 1600 Agreement(s)	4	4	4								12
170.10.25 - Coastal Zone Development Permit	4	4	4	4							16
170.10.30 - Local Agency Concurrence/Permit	4	4	4	4							16
170.10.40 - Waste Discharge (NPDES) Permit(s)											-
170.10.45 - USEFWS Approval											-
170.10.50 - RWQOCB 401 Permit	4	4	4								12
170.10.60 - Environmental Commitments Record	2	4									6
170.10.95 - Other Permits											-
170.45 - MOU from TERO											-
170.10.55 - NEPA Delegation											-
Total Permits, Agreements & Route Adoptions	22	24	20	8	-	-	-	-	-	-	74
<b>Draft Environmental Document Circulation and Preferred Project Alternative Identification - Task Management Activities</b>											
175.05.05 - Master Dist & Inv Lists		8									8
175.05.10 - Notices Regarding Hearing & DED		8									8
175.05.15 - DED Publication & Circulation		24									24
175.05.20 - Federal Consistency Det. (Coastal)											-
175.05.99 - Other DED Circulation Products	16										16
175.10.05 - Need for Public Hearing Det.	4	4	4	4							20
175.10.10 - Public Hearing Logistics		8									8
175.10.15 - Displays for Public Hearing	4	16	8								36
175.10.20 - 2 <sup>nd</sup> Not. Pub. Hear. & Avail. of DED											-
175.10.25 - Map Display & Pub. Hearing Plan	16		8								32
175.10.30 - Display Public Hearing Maps	4	16	8								28
175.10.35 - Public Hearing	8	16	8	8		8					56
175.10.40 - Record of Public Hearing		8									8
175.10.99 - Other Public Hearing Products	8										8
175.15 - Public Comment Res. & Corr.	80										80
175.20 - Project Preferred Alternative	4	8	8	8							28
175.25 - NEPA Delegation	4	16									20
Total DED & Preferred Proj. Alt. Identification	28	252	44	20	-	8	-	-	-	28	380
<b>Project Report and Final Environmental Document</b>											
180.05.05 - Updated Draft Project Report	2	8	2	2							14
180.05.10 - Approved Project Report											-
180.05.15 - Updated Storm Water Data Report						1					1
180.05.99 - Other Final Project Report Products											-
180.10.05 - Approved FED											-
180.10.05.05 - Draft FED Review	8	16	8	8	8						56
180.10.05.10 - Revised Draft FED	16										16
180.10.05.15 - Section 4(f) Evaluation	8	40									48
180.10.05.20 - Findings											-
180.10.05.25 - Statement of Overriding Consid.											-
180.10.05.30 - CEQA Certification											-
180.10.05.35 - FHWA Approval											-
180.10.05.40 - Section 106 Cons. & MOA	4	4		80							88
180.10.05.45 - Section 7 Consult											-
180.10.05.50 - Final Section 4(f) Statement	4	40									44
180.10.05.55 - Floodplain Only PAF											-
180.10.05.60 - Wetlands Only PAF											-
180.10.05.65 - Section 404 Compliance	4	4	40								48
180.10.05.70 - Mitigation Measures	4	8	40								52
180.10.10 - Public Dist of FED. Resp to Comments	4	120	8	8							148
180.10.99 - Other FED Products											-
180.15.05 - ROD (NEPA)											-
180.15.10 - NOD (CEQA)	4	8									12
180.15.20 - Environmental Commitments Record	2	4	2	2							10
180.15.99 - Other Completed ED Products											-
180.20 - NEPA Delegation	2	8	100	100	8						210
Total PR & FED	46	276	100	100	8	1				16	547

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Base Maps and Plan Sheets during PS&amp;E Development</b>											
185.05.05 – Project Concept Review											-
185.05.10 – Updated Project Information						4					4
185.05.99 – Other Updated Project Info Products											-
185.15.20 – Value Analysis											-
Total Base Maps and Plan Sheets during PS&E	-	-	-	-	-	4	-	-	-	-	4
<b>Right of Way Property Management and Excess Land</b>											
195.40.20 – Property Maint. & Rehab (Rentable)											-
195.40.25 – Prop. Maint. & Rehab (Non-Rentable)											-
195.40.30 – HW & Hazardous Materials											-
195.40.35 – Transfer of Prop to Clearance Status											-
195.40.99 – Other Property Mgmt Products											-
195.45.05 – Excess Lands Inventory											-
195.45.20 – Property Disposal up to \$15K											-
195.45.25 – Property Disposal from \$15K to \$500K											-
195.45.30 – Property Disposal over \$500K											-
195.45.99 – Other Excess Land Products											-
Total Base RW Property Mgmt and Excess Land	-	-	-	-	-	-	-	-	-	-	-
<b>Utility Coordination</b>											
200.15 – Approved Utility Relocation Plan											-
200.20 – Utility Relocation Package											-
Total Utility Coordination	-	-	-	-	-	-	-	-	-	-	-

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Permits, Agreements &amp; Route Adoptions during PS&amp;E Component - Task Management Activities</b>											
205.05 - Required Permits											
205.10.05 - USACE Permit (404)	2	8	24								34
205.10.10 - US Forest Service Permit(s)											
205.10.15 - US Coast Guard Permit	2	16	4								22
205.10.20 - DFG 1600 Agreement(s)	8	8	80								90
205.10.25 - Coastal Zone Development Permit	8	120	40								168
205.10.30 - Local Agency Concurrence/Permit	4	40	40								84
205.10.40 - Waste Discharge (NPDES) Permit(s)						4					4
205.10.45 - USFWS Approval	2	8	40								50
205.10.50 - RWQCB 401 Permit	2	8	80			40					130
205.10.60 - Updated ECR	2	4	2	2							10
205.10.95 - Other Permits											
205.20.05 - Draft Freeway Agreement											
205.20.10 - Draft Freeway Agreement Review											
205.20.15 - Final Freeway Agreement											
205.20.20 - Executed Freeway Agreement											
205.25 - Agreement for Material Sites											
205.40.99 - Other Route Adoption Products	4	4		120							128
205.45 - MOU from TERO	2	16	2	2							22
205.55 - NEPA Delegation											
Total Agreements & Route Adoptions	30	232	312	124		44					742

**Right of Way Interests for Project Right of Way Certification**

225.55.20 - Right of Way Clearance											
Total RW Interests for Project RW Certification											

**Draft PS&E**

230.05.45 - Noise Barrier Plans											
230.05.65 - Water Pollution Control Plans											
230.10.05 - Highway Planting Plans											
230.10.15 - Plant List											
230.30 - Draft Drainage Plans											
230.35.10 - Highway Planting Specifications											
230.35.35 - Water Pollution Control Specs											
230.35.40 - Erosion Control Specifications											
230.35.99 - Other Draft Specification Products											
230.60.05 - Updated Storm Water Data Report						2					2
230.60.10 - Other PS&E Reviews & Update PR	2	4	4	4							14
230.99 - Other Draft PS&E Products											
Total Draft PS&E	2	4	4	4		2					16

**Environmental Impact Mitigation and Hazardous Waste Clean-up - Task Management Activities**

235.05.05 - Historical Structures Mitigation											
235.05.10 - Archaeological & Cultural Mitigation											
235.05.15 - Biological Mitigation											
235.05.20 - Environmental Mitigation R/W Work											
235.05.25 - Paleontology Mitigation											
235.05.99 - Other Env. Mitigation Products											
235.10.05 - Right of Permit for HW Site Inv.											
235.10.10 - HW Sites Survey											
235.10.15 - Detailed HW Site Investigation											
235.15 - HW Management Plan											
235.20 - HW PS&E					8						8
235.25 - HW Clean-up											
235.30 - Certificate of Sufficiency											
235.35 - Long Term Mitigation Monitoring											
235.40 - Updated Environmental Commit. (ECR)	2	4	4	4							14
235.45 - NEPA Delegation	2	16	4	4							26
Total Env. Impact Mitigation & HW Clean-up	4	20	8	8							48

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Post Right of Way Certification Work</b>											
245.55.20 - Right of Way Clearance	-	-	-	-	-	-	-	-	-	-	-
Total Post RW Clearance Work	-	-	-	-	-	-	-	-	-	-	-
<b>Final District PS&amp;E Package</b>											
255.05 - Circ. & Rev. Draft Dist PS&E	2	8	4	4	-	8	-	-	-	-	26
255.10.25 - Updated Technical Reports	-	-	-	-	-	-	-	-	-	-	-
255.15 - Environmental Reevaluation	2	16	8	8	-	-	-	-	-	-	34
255.20.05 - Rev. Plans for Drafting Stds. Comp	-	-	-	-	-	-	-	-	-	-	-
255.40 - Resident Engineer's Pending File	8	4	4	4	-	-	-	-	-	-	16
255.45 - NEPA Delegation	2	16	4	4	-	-	-	-	-	-	26
Total Final District PS&E Package	6	48	20	20	-	8	-	-	-	-	102
<b>Contract Bid Documents "Ready to List"</b>											
260.75 - Env Cert at RTL	2	8	4	4	-	-	-	-	-	-	18
Total Contract Bid Documents "RTL"	2	8	4	4	-	-	-	-	-	-	18
<b>Construction Engineering and General Contract Administration</b>											
270.15.50 - Miscellaneous Stakes	-	-	-	-	-	-	-	-	-	-	-
270.20.05 - Resident Engineer File Review	-	-	-	-	-	-	-	-	-	-	-
270.20.10 - Proj. Plans, Spec. Prov. & Est. Rev.	-	-	-	-	-	-	-	-	-	-	-
270.20.45 - Cont. WPCP Review	-	-	-	-	-	-	-	-	-	-	-
270.20.50 - Technical Support	-	40	40	160	-	-	-	-	16	-	256
270.25.15 - Pre-Construction Meeting	-	8	8	8	-	-	-	-	8	-	32
270.30.10 - Inspection of Const. Work for Comp.	-	-	-	-	-	-	-	-	-	-	-
270.55 - Final Inspection & Acceptance Recom.	-	-	-	-	-	-	-	-	-	-	-
270.70 - Updated ECR	2	4	2	2	-	-	-	-	8	-	18
270.75 - Resource Agency Permit Ren. & Ext.	-	-	-	-	-	-	-	-	-	-	-
270.80 - Long Term Env Mit/Mont during Const.	-	-	-	-	-	-	-	-	-	-	-
Total Const Engineering & Gen. Contract Admin.	2	52	50	170	-	-	-	-	32	-	306
<b>Construction Contract Change Orders</b>											
285.05.05 - Need for CCO Determination	-	-	-	-	-	-	-	-	-	-	-
285.10.15 - "Other" Functional Support	-	-	-	-	-	-	-	-	-	-	-
Total Construction CCOs	-	-	-	-	-	-	-	-	-	-	-
<b>Construction Contract Claims</b>											
290.35 - Technical Support	2	8	8	16	-	-	-	-	16	-	50
Total Construction Contract Claims	2	8	8	16	-	-	-	-	16	-	50
<b>Contract Acceptance, Final Construction Estimate and Final Report</b>											
295.35 - Certificate of Environmental Compliance	8	40	80	16	-	-	-	-	16	-	16
295.40 - Long Term Env Mit/Mont after CCA	8	40	80	16	-	-	-	-	16	-	144
Total Final Construction	8	40	80	16	-	-	-	-	16	-	160
Total Project Hours	228	1,318	1,108	1,568	48	147	-	-	64	220	4,709
											2.60 PY

ATTACHMENT B2 - Resource Hours by WBS Code

EA: 01-0B030

Description: 255 Feasibility Study Segment 2

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
Assigned Unit					275	275		292	275		
<b>Project Management</b>											
100.10.05 - PA&ED Init. & Png.						4					4
100.10.10 - PA&ED Exec. & Ctrl.											-
100.10.15 - PA&ED Closeout											-
100.10.20 - PA&ED Project Shelving											-
100.10.25 - PA&ED Project Unshelving											-
100.10.30 - PA&ED Update Admin Record											-
100.10.35 - PA&ED Cooperative Agreement											-
100.10.99 - PA&ED Other Proj. Mgmt. Products											-
100.15.05 - PS&E Init. & Png.											-
100.15.10 - PS&E Exec. & Ctrl.											-
100.15.15 - PS&E Closeout											-
100.15.20 - PS&E Project Shelving											-
100.15.25 - PS&E Project Unshelving											-
100.15.30 - PS&E Update Admin Record											-
100.15.35 - PS&E Cooperative Agreement											-
100.15.99 - PS&E Other Proj. Mgmt. Products											-
100.20.05 - Const. Init. & Png.											-
100.20.10 - Const. Exec. & Ctrl.											-
100.20.15 - Const. Closeout											-
100.20.20 - Const. Project Shelving											-
100.20.25 - Const. Project Unshelving											-
100.20.30 - Const. Update Admin Record											-
100.20.35 - Const. Cooperative Agreement											-
100.20.99 - Const. Other Proj. Mgmt. Products											-
100.25.05 - RW Init. & Png.											-
100.25.10 - RW Exec. & Ctrl.											-
100.25.15 - RW Closeout											-
100.25.20 - RW Project Shelving											-
100.25.25 - RW Project Unshelving											-
100.25.30 - RW Update Admin Record											-
100.25.35 - RW Cooperative Agreement											-
100.25.50 - RW Ex. Coop. Agree. Relinquish											-
100.25.99 - RW Other Proj. Mgmt. Products											-
Total Project Management						4					4
<b>Preliminary Engineering Studies and Draft Project Report</b>											
160.05.05 - Approved PID Review	1										6
160.05.10 - Geotechnical Information Review						4					-
160.05.20 - Traffic Data & Forecasts Review											-
160.05.30 - Project Scope Review	1										2
160.05.99 - Other Updated Project Info Products											-
160.10.20 - Value Analysis											-
160.10.25 - Hydraulics/Hydrology Study											-
160.10.30 - Hwy Planting Design Concepts											-
160.10.40 - Updated Right of Way Data Sheets											-
160.10.99 - Other Engineering Studies											-
160.15.20 - Draft Project Report	1										6
160.15.25 - Draft PR Circ. Review & Approval	2					4					4
160.30.05 - Maps for ESR	1										2
160.30.10 - Surveys & Mapping for ESR											-
160.30.15 - Prop. Access Rights - Env/Eng Studies											-
160.40 - NEPA Delegation											-
Total Pre-Eng. Studies & Draft PR	6					8					20

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Environmental Studies and Draft Environmental Document - Task Management Activities</b>											
165.05.05 - Project Information Review	2	4	4	4							14
165.05.10 - Pub & Agency Scoping Process	2	4	4	4							14
165.05.15 - Alternatives for Further Study											
165.05.99 - Other Env Scoping Alt ID in PID											
165.10.15 - CIA, Land Use & Growth Studies											
165.10.20 - VIA & Scenic Resource Evaluation	4	8								160	172
165.10.25 - Noise Study											
165.10.30 - Air Quality Study											
165.10.35 - Water Quality Studies			4			40					44
165.10.40 - Energy Studies											
165.10.45 - Summary Geotech Report											
165.10.50 - Hazardous Waste PSI					40						
165.10.55 - Draft RW Relocation Impact Doc.											
165.10.60 - Loc. Hyd. & Floodplain Study Rpts.		4									4
165.10.65 - Paleontology Study											
165.10.70 - Wild and Scenic Rivers Coordination											
165.10.75 - Environmental Commitments Record		4									4
165.10.99 - Other Environmental Studies	4	8	80								92
165.15.05 - Biological Assessment		8	160								168
165.15.10 - Wetlands Study		40	80								120
165.15.15 - Resource Agency Permit Related Coord		8	160								172
165.15.20 - NES Report	4	4	20								24
165.15.99 - Other Biological Studies											
165.20.05 - Archaeological Survey											
165.20.05.05 - APE/Study Area Maps		4	4	24							28
165.20.05.10 - Native American Consultation	4	4	4	40							48
165.20.05.15 - Records & Literature Search		4		24							24
165.20.05.20 - Field Survey				40							40
165.20.05.25 - ASR				160							160
165.20.05.99 - Other Archy Survey Products				20							20
165.20.10 - Extended Phase I Archy Studies											
165.20.10.05 - Native American Consultation				40							40
165.20.10.10 - Extended Phase I Proposal				24							24
165.20.10.15 - Extended Phase I Field Inv.				80							80
165.20.10.20 - Extended Phase I Mat. Analysis				24							24
165.20.10.25 - Extended Phase I Report				40							40
165.20.10.99 - Other Ext Phase I Archy Prod				24							24
165.20.15 - Phase II Archy Studies											
165.20.15.05 - Native American Consultation											
165.20.15.10 - Phase II Proposal											
165.20.15.15 - Phase II Field Investigation											
165.20.15.20 - Phase II Materials Analysis											
165.20.15.25 - Phase II Report											
165.20.15.99 - Other Ext Phase II Archy Study											
165.20.20 - Hist. & Architect Resource Studies											
165.20.20.05 - Prelim APE/SAM for Arch.											
165.20.20.10 - HRES - Archaeology											
165.20.20.15 - HRES - Architecture											
165.20.20.20 - Bridge Evaluation											
165.20.20.99 - Other Hist and Arch Resource Prod											
165.20.25 - Cultural Res. Comp. Cons. Docs.											
165.20.25.05 - Final APE/Study Area Maps				40							40
165.20.25.10 - PRC 5024.5 Consultation				80							80
165.20.25.15 - HPSR/HRCR				160							160
165.20.25.20 - Finding of Effect (FOE)				120							120
165.20.25.25 - Archy Data Rec. Plan/Treat. Plan				80							80
165.20.25.30 - MOA				24							24
165.20.25.99 - Other CR Compliance Consult Prod	16	80	16	16						8	136
165.25.05 - DED Analysis	8	120									128
165.25.10 - Section 4(f) Evaluation											
165.25.15 - CE/CE Determination											
165.25.20 - Env. Quality Crt. & Other Reviews	8	8	8	8		4				8	44
165.25.25 - Approval to Circulate Resolution	8	8									16
165.25.30 - Environmental Coordination											
165.25.99 - Other Draft ED Products	8	16									24
165.30 - NEPA Delegation	2	16	2	2							22
Total Environmental Studies & DED	70	348	538	1,078		44				176	2,254

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Permits, Agreements, and Route Adoptions during PA&amp;ED Component - Task Management Activities</b>											
170.05 - Required Permits											
170.10.05 - USAGE Permit (404)	4	4	4								12
170.10.10 - US Forest Service Permit(s)											
170.10.15 - US Coast Guard Permit	4	4	4								12
170.10.20 - DFG 1600 Agreement(s)	4	4	4								16
170.10.30 - Coastal Zone Development Permit	4	4	4	4							16
170.10.30 - Local Agency Concurrence/Permit	4	4	4	4							16
170.10.40 - Waste Discharge (NPDES) Permit(s)											
170.10.45 - USFWS Approval											
170.10.50 - RMQCB 401 Permit	4	4	4								12
170.10.60 - Environmental Commitments Record	2	4									6
170.10.95 - Other Permits											
170.45 - MOU from TERO											
170.10.55 - NEPA Delegation											
Total Permits, Agreements & Route Adoptions	22	24	20	8							74

**Draft Environmental Document Circulation and Preferred Project Alternative Identification - Task Management Activities**

175.05.05 - Master Dist & Inv Lists	8										8
175.05.10 - Notices Regarding Hearing & DED	8										8
175.05.15 - DED Publication & Circulation	24										24
175.05.20 - Federal Consistency Det. (Coastal)											
175.05.99 - Other DED Circulation Products	16										16
175.10.05 - Need for Public Hearing Det.	4	4	4	4							20
175.10.10 - Public Hearing Logistics											8
175.10.15 - Displays for Public Hearing	4	16	8								36
175.10.20 - 2 <sup>nd</sup> Not. Pub. Hear. & Avail. of DED											
175.10.25 - Map Display & Pub. Hearing Plan	16	16	8								32
175.10.30 - Display Public Hearing Maps	4	16	8								32
175.10.35 - Public Hearing	8	16	8	8							48
175.10.40 - Record of Public Hearing											8
175.10.99 - Other Public Hearing Products	8										8
175.15 - Public Comment Res. & Corr.	160										160
175.20 - Project Preferred Alternative	4	8	8	8							28
175.25 - NEPA Delegation	4	16									20
Total DED & Preferred Proj. Alt. Identification	28	332	44	20						28	452

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Project Report and Final Environmental Document</b>											
180.05.05 – Updated Draft Project Report	2	8	2	2							14
180.05.10 – Approved Project Report						1					1
180.05.15 – Updated Storm Water Data Report											
180.05.99 – Other Final Project Report Products											
180.10.05 – Approved FED											
180.10.05.05 – Draft FED Review	8	16	8	8						8	48
180.10.05.10 – Revised Draft FED		16									16
180.10.05.15 – Section 4(f) Evaluation		40									48
180.10.05.20 – Findings											
180.10.05.25 – Statement of Overriding Consid.											
180.10.05.30 – CEQA Certification											
180.10.05.35 – FHWA Approval											
180.10.05.40 – Section 106 Cons. & MOA	4	4		80							88
180.10.05.45 – Section 7 Consult											
180.10.05.50 – Final Section 4(f) Statement	4	40									44
180.10.05.55 – Floodplain Only PAF											
180.10.05.60 – Wetlands Only PAF											
180.10.05.65 – Section 404 Compliance	4	4	40								48
180.10.05.70 – Mitigation Measures	4	8	40								52
180.10.10 – Public Dist of FED. Resp to Comments	4	120	8	8						8	148
180.10.99 – Other FED Products											
180.15.05 – ROD (NEPA)											
180.15.10 – NOD (CEQA)	4	16									20
180.15.20 – Environmental Commitments Record	2	4	2	2							10
180.15.99 – Other Completed ED Products		16									16
180.20 – NEPA Delegation	2	8									10
Total PR & FED	46	300	100	100		1				16	563
<b>Base Maps and Plan Sheets during PS&amp;E Development</b>											
185.05.05 – Project Concept Review											
185.05.10 – Updated Project Information						4					4
185.05.99 – Other Updated Project Info Products											
185.15.20 – Value Analysis											
Total Base Maps and Plan Sheets during PS&E						4					4
<b>Right of Way Property Management and Excess Land</b>											
195.40.20 – Property Maint. & Rehab (Rentable)											
195.40.25 – Prop. Maint. & Rehab (Non-Rentable)											
195.40.30 – HW & Hazardous Materials											
195.40.35 – Transfer of Prop to Clearance Status											
195.40.99 – Other Property Mgmt Products											
195.45.05 – Excess Lands Inventory											
195.45.20 – Property Disposal up to \$15K											
195.45.25 – Property Disposal from \$15K to \$500K											
195.45.30 – Property Disposal over \$500K											
195.45.99 – Other Excess Land Products											
Total Base RW Property Mgmt and Excess Land											
<b>Utility Coordination</b>											
200.15 – Approved Utility Relocation Plan											
200.20 – Utility Relocation Package											
Total Utility Coordination											

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Permits, Agreements &amp; Route Adoptions during PS&amp;E Component - Task Management Activities</b>											
205.05 - Required Permits											
205.10.05 - USACE Permit (404)	2	8	24								34
205.10.10 - US Forest Service Permit(s)	2	16	4								22
205.10.15 - US Coast Guard Permit	2	8	80								90
205.10.20 - DFG-1600 Agreement(s)	8	120	40								168
205.10.25 - Coastal Zone Development Permit	4	40	40								84
205.10.30 - Local Agency Concurrence/Permit	2	8	40			4					4
205.10.40 - Waste Discharge (NPDES) Permit(s)	2	8	40								50
205.10.45 - USFWS Approval	2	4	80	2		40					130
205.10.50 - RWQCB 401 Permit	2	4	2								10
205.10.80 - Updated ECR	2	4	2								10
205.10.85 - Other Permits											
205.20.05 - Draft Freeway Agreement											
205.20.10 - Draft Freeway Agreement Review											
205.20.15 - Final Freeway Agreement											
205.20.20 - Executed Freeway Agreement											
205.25 - Agreement for Material Sites											
205.40.99 - Other Route Adoption Products	4	4		120							128
205.45 - MQU from TERO	2	16	2	2							22
205.55 - NEPA Delegation	2	232	312	124		44					742
<b>Total Agreements &amp; Route Adoptions</b>	<b>30</b>	<b>232</b>	<b>312</b>	<b>124</b>		<b>44</b>					<b>742</b>

**Right of Way Interests for Project Right of Way Certification**

225.55.20 - Right of Way Clearance											
<b>Total RW Interests for Project RW Certification</b>	<b>-</b>										

**Draft PS&E**

230.05.45 - Noise Barrier Plans											
230.05.65 - Water Pollution Control Plans											
230.10.05 - Highway Planting Plans											
230.10.15 - Plant List											
230.30 - Draft Drainage Plans											
230.35.10 - Highway Planting Specifications											
230.35.35 - Water Pollution Control Specs											
230.35.40 - Erosion Control Specifications											
230.35.99 - Other Draft Specification Products											
230.60.05 - Updated Storm Water Data Report						2					2
230.60.10 - Other PS&E Reviews & Update PR	2	4	4	4							14
230.99 - Other Draft PS&E Products	2	4	4	4		2					16
<b>Total Draft PS&amp;E</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>		<b>2</b>					<b>16</b>

**Environmental Impact Mitigation and Hazardous Waste Clean-up - Task Management Activities**

235.05.05 - Historical Structures Mitigation											
235.05.10 - Archaeological & Cultural Mitigation											
235.05.15 - Biological Mitigation											
235.05.20 - Environmental Mitigation R/W Work											
235.05.25 - Paleontology Mitigation											
235.05.99 - Other Env. Mitigation Products											
235.10.05 - Right of Permit for HW Site Inv.	2	16	4	4							14
235.10.10 - HW Sites Survey	2	4	4	4							26
235.10.15 - Detailed HW Site Investigation	4	20	8	8							48
235.15 - HW Management Plan											
235.20 - HW PS&E									8		8
235.25 - HW Clean-up											
235.30 - Certificate of Sufficiency											
235.35 - Long Term Mitigation Monitoring											
235.40 - Updated Environmental Commit. (ECR)	2	4	4	4							14
235.45 - NEPA Delegation	2	16	4	4							26
<b>Total Env. Impact Mitigation &amp; HW Clean-up</b>	<b>4</b>	<b>20</b>	<b>8</b>	<b>8</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>48</b>

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Post Right of Way Certification Work</b>											
245.55.20 – Right of Way Clearance	-	-	-	-	-	-	-	-	-	-	-
Total Post RW Clearance Work	-	-	-	-	-	-	-	-	-	-	-
<b>Final District PS&amp;E Package</b>											
255.05 – Circ. & Rev. Draft Dist PS&E	2	8	4	4	-	8	-	-	-	-	26
255.10.25 – Updated Technical Reports	-	-	-	-	-	-	-	-	-	-	-
255.15 – Environmental Reevaluation	4	40	16	16	-	-	-	-	-	-	76
255.20.05 – Rev. Plans for Drafting Sids. Comp	-	-	-	-	-	-	-	-	-	-	-
255.40 – Resident Engineer's Pending File	8	8	4	4	-	-	-	-	-	-	16
255.45 – NEPA Delegation	2	16	4	4	-	-	-	-	-	-	26
Total Final District PS&E Package	8	72	28	28	-	8	-	-	-	-	144
<b>Contract Bid Documents "Ready to List"</b>											
260.75 – Env Cert at RTL	2	8	4	4	-	-	-	-	-	-	18
Total Contract Bid Documents "RTL"	2	8	4	4	-	-	-	-	-	-	18
<b>Construction Engineering and General Contract Administration</b>											
270.15.50 – Miscellaneous Stakes	-	-	-	-	-	-	-	-	-	-	-
270.20.05 – Resident Engineer File Review	-	-	-	-	-	-	-	-	-	-	-
270.20.10 – Proj. Plans, Spec. Prov. & Est. Rev.	-	-	-	-	-	-	-	-	-	-	-
270.20.45 – Cont. WPCP Review	-	-	-	-	-	-	-	-	-	-	-
270.20.50 – Technical Support	40	40	160	160	-	-	-	-	-	-	266
270.25.15 – Pre-Construction Meeting	8	8	8	8	-	-	-	-	-	-	32
270.30.10 – Inspection of Const. Work for Comp.	-	-	-	-	-	-	-	-	-	-	-
270.55 – Final Inspection & Acceptance Recom.	-	-	-	-	-	-	-	-	-	-	-
270.70 – Updated ECR	2	4	2	2	-	-	-	-	-	-	18
270.75 – Resource Agency Permit Ren. & Ext.	-	-	-	-	-	-	-	-	-	-	-
270.80 – Long Term Env Mit/Mon during Const	-	-	-	-	-	-	-	-	-	-	-
Total Const Engineering & Gen. Contract Admin.	2	52	50	170	-	-	-	-	32	-	306
<b>Construction Contract Change Orders</b>											
285.05.05 – Nased for CCO Determination	-	-	-	-	-	-	-	-	-	-	-
285.10.15 – "Other" Functional Support	-	-	-	-	-	-	-	-	-	-	-
Total Construction CCOs	-	-	-	-	-	-	-	-	-	-	-
<b>Construction Contract Claims</b>											
290.35 – Technical Support	2	8	8	16	-	-	-	-	16	-	50
Total Construction Contract Claims	2	8	8	16	-	-	-	-	16	-	50
<b>Contract Acceptance, Final Construction Estimate and Final Report</b>											
295.35 – Certificate of Environmental Compliance	8	40	160	16	-	-	-	-	16	-	16
295.40 – Long Term Env Mit/Mon after CCA	8	40	160	16	-	-	-	-	16	-	224
Total Final Construction	8	40	160	16	-	-	-	-	16	-	240
Total Project Hours	230	1,446	1,276	1,576	48	115	-	-	64	220	4,935
											2.80 PY

ATTACHMENT B2 - Resource Hours by WBS Code

EA: 01-0B030

Description: 255 Feasibility Study Segments 3 and 4

WBS Task Activity Code Assigned Unit	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Project Management</b>											
100.10.05 - PA&ED Init. & Chg.											4
100.10.10 - PA&ED Exec. & Chg.											4
100.10.15 - PA&ED Closeout											-
100.10.20 - PA&ED Project Shelving											-
100.10.25 - PA&ED Update Admin Record											-
100.10.30 - PA&ED Cooperative Agreement											-
100.10.35 - PA&ED Other Proj. Mgmt. Products											-
100.15.05 - PS&E Init. & Pning.											-
100.15.10 - PS&E Exec. & Chg.											-
100.15.15 - PS&E Closeout											-
100.15.20 - PS&E Project Shelving											-
100.15.25 - PS&E Update Admin Record											-
100.15.30 - PS&E Cooperative Agreement											-
100.15.35 - PS&E Other Proj. Mgmt. Products											-
100.20.05 - Const. Init. & Pning.											-
100.20.10 - Const. Exec. & Chg.											-
100.20.15 - Const. Closeout											-
100.20.20 - Const. Project Shelving											-
100.20.25 - Const. Update Admin Record											-
100.20.30 - Const. Cooperative Agreement											-
100.20.35 - Const. Other Proj. Mgmt. Products											-
100.25.05 - RW Init. & Pning.											-
100.25.10 - RW Exec. & Chg.											-
100.25.15 - RW Closeout											-
100.25.20 - RW Project Shelving											-
100.25.25 - RW Update Admin Record											-
100.25.30 - RW Cooperative Agreement											-
100.25.35 - RW Other Proj. Mgmt. Products											-
Total Project Management								292	275		4
<b>Preliminary Engineering Studies and Draft Project Report</b>											
160.05.05 - Approved BID Review	1										6
160.05.10 - Geotechnical Information Review		1									4
160.05.20 - Traffic Data & Forecasts Review											-
160.05.30 - Project Scope Review	1										2
160.05.99 - Other Updated Project Info Products											-
160.10.20 - Value Analysis											-
160.10.25 - Hydraulics/Hydrology Study											-
160.10.30 - Hwy Planting Design Concepts											-
160.10.40 - Updated Right of Way Data Sheets											-
160.10.99 - Other Engineering Studies											-
160.15.20 - Draft Project Report	1										6
160.15.25 - Draft PR Circ. Review & Approval	2										4
160.30.05 - Maps for ESR	1										2
160.30.10 - Surveys & Mapping for ESR											-
160.30.15 - Prop. Access Rights - Env/Eng Studies											-
160.40 - NEPA Delegation											-
Total Pre-Eng. Studies & Draft PR	6	6									20

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Environmental Studies and Draft Environmental Document - Task Management Activities</b>											
165.05.05 - Pub & Inform Report Review	2	4	4	4							14
165.05.10 - Pub & Inform Comment Process	2	4	4	4							14
165.05.15 - Alternatives for Further Study											
165.05.99 - Other Env. Scoping/Alt in PD											
165.10.15 - CIA Land Use & Growth Studies	4	8								160	172
165.10.20 - VIA & Scenic Resource Evaluation											
165.10.25 - Noise Study											
165.10.30 - Air Quality Study											
165.10.35 - Water Quality Studies						40					44
165.10.40 - Energy Studies											
165.10.45 - Summary Geotech Report					40						40
165.10.50 - Hazardous Waste PSI											
165.10.55 - Draft RW Relocation Impact Doc.											
165.10.60 - Loc. Hyd. & Floodplain Study Rpts.			4								4
165.10.65 - Paleontology Study											
165.10.70 - Wild and Scenic Rivers Coordination											
165.10.75 - Environmental Commitments Record			4								4
165.10.89 - Other Environmental Studies											
165.15.05 - Biological Assessment	4	8	80								92
165.15.10 - Wetlands Study			8	160							168
165.15.15 - Resource Agency Permit Related Coord		40	80								120
165.15.20 - NES Report	4	8	160								172
165.15.99 - Other Biological Studies			4	20							24
165.20.05 - Archaeological Survey											
165.20.05.05 - APE/Study Area Map(s)	4	4		24							28
165.20.05.10 - Native American Consultation			4	40							44
165.20.05.15 - Records & Literature Search				24							24
165.20.05.20 - Field Survey				40							40
165.20.05.25 - ASR				160							160
165.20.05.99 - Other Archy Survey Products				20							20
165.20.10 - Extended Phase I Archy Studies											
165.20.10.05 - Native American Consultation				40							40
165.20.10.10 - Extended Phase I Proposal				24							24
165.20.10.15 - Extended Phase I Field Inv.				80							80
165.20.10.20 - Extended Phase I Mat. Analysis				24							24
165.20.10.25 - Extended Phase I Report				40							40
165.20.10.99 - Other Ext Phase I Archy Prod				24							24
165.20.15 - Phase II Archy Studies											
165.20.15.05 - Native American Consultation											
165.20.15.10 - Phase II Proposal											
165.20.15.15 - Phase II Field Investigation											
165.20.15.20 - Phase II Materials Analysis											
165.20.15.25 - Phase II Report											
165.20.20 - Other Ext Phase II Archy Studies											
165.20.20.05 - APE/Study Area Maps											
165.20.20.10 - HRER - Archaeology											
165.20.20.15 - HRER - Archaeology											
165.20.20.20 - Bridge Evaluation											
165.20.20.99 - Other Hike and Arch. Resource Prod											
165.20.25 - Cultural Res. Comp. Cont. Docs.											
165.20.25.05 - Final APE/Study Area Maps				40							40
165.20.25.10 - PRG 5024.5 Consultation				80							80
165.20.25.15 - HPSR/HRCR				160							160
165.20.25.20 - Finding of Effect (FOE)				120							120
165.20.25.25 - Archy Data Rec. Pin/Treat. Pin											
165.20.25.30 - MOA				80							80
165.20.25.99 - Other CR Compliance Consult Prod				24							24
165.25.05 - DED Analysis	16	80	16	16							124
165.25.10 - Section 4(f) Evaluation	8	120								8	136
165.25.15 - CE/CE Determination											
165.25.20 - Env. Quality Cmt. & Other Reviews	8	8	8	8						8	44
165.25.25 - Approval to Circulate Resolution	8	8				4					16
165.25.30 - Environmental Coordination											
165.25.99 - Other Draft ED Products	8	16									24
165.30 - NEPA Delegation	2	16	2	2							22
Total Environmental Studies & DED	70	348	538	1,078	40	44				178	2,284
<b>Permits, Agreements, and Route Adoptions during PA&amp;ED Component - Task Management Activities</b>											
170.05 - Required Permits											
170.10.05 - USACE Permit (404)	4	4	4								12
170.10.10 - US Forest Service Permit(s)											
170.10.15 - US Coast Guard Permit	4	4	4								12
170.10.20 - DFG 1600 Agreement(s)	4	4	4	4							16
170.10.25 - Coastal Zone Development Permit	4	4	4	4							16
170.10.30 - Local Agency Concurrence/Permit	4	4	4	4							16
170.10.40 - Waste Discharge (NPDES) Permit(s)											
170.10.45 - USFWS Approval	4	4	4								12
170.10.50 - RWQCB 401 Permit	2	4	4								6
170.10.60 - Environmental Commitments Record											
170.10.95 - Other Permits											
170.45 - MOU from TERO											
170.10.99 - NEPA Delegation											
Total Permits, Agreements & Route Adoptions	22	24	20	8							74

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Draft Environmental Document Circulation and Preferred Project Alternative Identification - Task Management Activities</b>											
175.05.05 - Master Dis. & Inv Lists		8									8
175.05.10 - Master Responder Hearing & DED		8									8
175.05.15 - DED Preparation & Circulation		24									24
175.05.20 - Federal (CEQ, Coastal)											
175.05.25 - Other DED Circulation Products		16									16
175.10.05 - Need for Public Hearing Products	4	4	4	4						4	20
175.10.10 - Public Hearing Location Det.		4									4
175.10.15 - Displays for Public Hearing	4	16	8								28
175.10.20 - 2 <sup>nd</sup> Not. Pub. Hear. & Avail. of DED		16	8								24
175.10.25 - Map Display & Pub. Hearing Plan	4	16	8								28
175.10.30 - Display Public Hearing Maps	8	16	8	8							48
175.10.40 - Record of Public Hearing		8									8
175.10.99 - Other Public Hearing Products		8									8
175.15 - Public Comment Res. & Corr.	4	160	8								160
175.20 - Project Preferred Alternative	4	16	8	8							28
175.25 - NEPA Delegation	4	16	8								28
Total DED & Preferred Proj. Alt. Identification	28	332	44	20						28	452
<b>Project Report and Final Environmental Document</b>											
180.05.05 - Updated Draft Project Report	2	8	2	2							14
180.05.10 - Approved Project Report						1					1
180.05.15 - Updated Storm Water Data Report											
180.05.99 - Other Final Project Report Products											
180.10.05 - Approved FED	8	16	8	8							48
180.10.05.05 - Draft FED Review		16									16
180.10.05.10 - Revised Draft FED	8	40									48
180.10.05.15 - Section 4(f) Evaluation											
180.10.05.20 - Findings											
180.10.05.25 - Statement of Overriding Consid.											
180.10.05.30 - CEQA Certification											
180.10.05.35 - FHWA Approval											
180.10.05.40 - Section 106 Cons. & MOA	4	4	80								88
180.10.05.45 - Section 7 Consult											
180.10.05.50 - Final Section 4(f) Statement	4	40									44
180.10.05.55 - Floodplain Only PAF											
180.10.05.60 - Wetlands Only PAF	4	4	40								44
180.10.05.65 - Section 404 Compliance	4	8	40								48
180.10.05.70 - Mitigation Measures	4	8	40								48
180.10.10 - Public Dist. of FED. Resp to Comments	4	120	8	8							148
180.10.99 - Other FED Products											
180.15.05 - ROD (NEPA)											
180.15.10 - ROD (CEQA)	4	16									20
180.15.20 - Environmental Commitments Record	2	4	2	2							10
180.15.99 - Other Completed ED Products		16									16
180.20 - NEPA Delegation	2	8									10
Total PR & FED	46	300	100	100		1				16	563
<b>Base Maps and Plan Sheets during PS&amp;E Development</b>											
185.05.05 - Project Concept Review											
185.05.10 - Updated Project Information						4					4
185.05.99 - Other Updated Project Info Products											
185.15.20 - Value Analysis											
Total Base Maps and Plan Sheets during PS&E						4					4
<b>Right of Way Property Management and Excess Land</b>											
195.40.20 - Property Mgmt. & Rehab (Rentable)											
195.40.25 - Property Mgmt. & Rehab (Non-Rentable)											
195.40.30 - HW & Hazardous Waste											
195.40.35 - Transfer of Prop to Clearance Status											
195.40.99 - Other Property Mgmt Products											
195.45.05 - Excess Lands Inventory											
195.45.20 - Property Disposal up to \$15K											
195.45.25 - Property Disposal from \$15K to \$500K											
195.45.30 - Property Disposal over \$500K											
195.45.99 - Other Excess Land Products											
Total Base RW/ Property Mgmt and Excess Land											
<b>Utility Coordination</b>											
200.15 - Approved Utility Relocation Plan											
200.20 - Utility Relocation Package											
Total Utility Coordination											

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Constr. Liaison	Landscape	Total
<b>Permits, Agreements &amp; Route Adoptions during PS&amp;E Component - Task Management Activities</b>											
205.05 - Required Permits	2	8	24								34
205.10.05 - USACE Permit (404)											
205.10.10 - US Forest Service Permit(s)	2	16	4								22
205.10.15 - US Coast Guard Permit	2	8	80								90
205.10.20 - DFG 1600 Agreement(s)	6	120	40								168
205.10.25 - Coastal Zone Development Permit	4	40	40								84
205.10.30 - Local Agency Concurrence/Permit	2	8	40								50
205.10.40 - Waste Discharge (NPDES) Permit(s)	2	8	40								50
205.10.45 - USFWS Approval	2	8	80								130
205.10.50 - RWQCB 401 Permit	2	4	2								10
205.10.60 - Updated ECR	2	4									
205.10.95 - Other Permits											
205.20.05 - Draft Freeway Agreement											
205.20.10 - Draft Freeway Agreement Review											
205.20.15 - Final Freeway Agreement											
205.20.20 - Executed Freeway Agreement											
205.25 - Agreement for Material Sites											
205.40.99 - Other Route Adoption Products	4	4									128
205.48 - MOU from TERO	2	16	2	120							142
205.99 - NEPA Delegation	2	2		2							4
Total Agreements & Route Adoptions	30	232	312	124		44					742
<b>Right of Way Interests for Project Right of Way Certification</b>											
225.55.20 - Right of Way Clearance											
Total RVV Interests for Project RVV Certification											
<b>Draft PS&amp;E</b>											
230.05.05 - Noise Barrier Plans											
230.05.65 - Water Pollution Control Plans											
230.10.05 - Highway Planning Plans											
230.10.15 - Plant List											
230.30 - Draft Drainage Plans											
230.35.10 - Highway Planning Specifications											
230.35.35 - Water Pollution Control Specs											
230.35.40 - Erosion Control Specifications											
230.35.99 - Other Draft Specification Products											
230.60.05 - Updated Storm Water Data Report						2					2
230.60.10 - Other PS&E Reviews & Update PR	2	4	4	4							14
230.99 - Other Draft PS&E Products	2	4	4	4		2					16
Total Draft PS&E	2	4	4	4		2					16
<b>Environmental Impact Mitigation and Hazardous Waste Clean-up - Task Management Activities</b>											
235.05.05 - Historical Structures Mitigation											
235.05.10 - Archaeological & Cultural Mitigation											
235.05.15 - Biological Mitigation											
235.05.20 - Environmental Mitigation R/W Work											
235.05.25 - Paleontology Mitigation											
235.05.99 - Other Env. Mitigation Products											
235.10.05 - Right of Way Permit for HW Site Inv.											
235.10.10 - HW Sites Survey											
235.10.15 - Detailed HW Site Investigation											
235.15 - HW Management Plan					8						8
235.20 - HW PS&E											
235.25 - HW Clean-up											
235.30 - Certificate of Sufficiency											
235.35 - Long Term Mitigation Monitoring	2	4	4	4							14
235.40 - Updated Environmental Commit. (ECR)	2	16	4	4							26
235.45 - NEPA Delegation	2	2		2							6
Total Env. Impact Mitigation & HW Clean-up	4	4	20	6	8						48

WBS Task Activity Code	Senior	Coord	Biology	Cultural	Haz Waste	Storm Water	Noise/Air	Sup Svcs	Const. Liaison	Landscape	Total
<b>Post Right of Way Certification Work</b>											
245.55.20 - Right of Way Clearance	-	-	-	-	-	-	-	-	-	-	-
Total Post RW Clearance Work	-	-	-	-	-	-	-	-	-	-	-
<b>Final District PS&amp;E Package</b>											
255.05 - Circ. & Rev. Draft Dist PS&E	2	8	4	4	-	8	-	-	-	-	26
255.10.25 - Updated Technical Reports	4	40	16	16	-	-	-	-	-	-	76
255.20.05 - Environmental Reevaluation	-	-	-	-	-	-	-	-	-	-	-
255.40 - Resident Engineer's Pending File	2	16	4	4	-	-	-	-	-	-	16
255.45 - NEPA Delegation	8	72	28	28	-	8	-	-	-	-	28
Total Final District PS&E Package	8	72	28	28	-	8	-	-	-	-	144
<b>Contract Bid Documents "Ready to List"</b>											
260.75 - Env Cert at RTL	2	8	4	4	-	-	-	-	-	-	18
Total Contract Bid Documents "RTL"	2	8	4	4	-	-	-	-	-	-	18
<b>Construction Engineering and General Contract Administration</b>											
270.15.50 - Miscellaneous Stakes	-	-	-	-	-	-	-	-	-	-	-
270.20.05 - Resident Engineer File Review	-	-	-	-	-	-	-	-	-	-	-
270.20.10 - Proj. Plans, Spec. Prov. & Est. Rev.	-	-	-	-	-	-	-	-	-	-	-
270.20.45 - Cont. W/PCP Review	-	-	-	-	-	-	-	-	-	-	-
270.20.50 - Technical Support	40	40	160	160	-	-	-	-	-	-	256
270.25.15 - Pre-Construction Meeting	8	8	8	8	-	-	-	-	-	-	32
270.30.10 - Inspection of Const. Work for Comp.	-	-	-	-	-	-	-	-	-	-	-
270.35 - Final Inspection & Acceptance Recom.	-	-	-	-	-	-	-	-	-	-	-
270.70 - Updated ECR	2	4	2	2	-	-	-	-	-	-	18
270.75 - Resource Agency Permit Ren. & Ext.	-	-	-	-	-	-	-	-	-	-	-
270.80 - Cont. Term Env Mit/Mon during Const	-	-	-	-	-	-	-	-	-	-	-
Total Const Engineering & Gen. Contract Admin.	2	52	50	170	-	-	-	-	-	-	306
<b>Construction Contract Change Orders</b>											
285.05.05 - Need for CCO Determination	-	-	-	-	-	-	-	-	-	-	-
285.10.15 - Other Functional Support	-	-	-	-	-	-	-	-	-	-	-
Total Construction CCOs	-	-	-	-	-	-	-	-	-	-	-
<b>Construction Contract Claims</b>											
290.35 - Technical Support	2	8	8	16	-	-	-	-	-	-	50
Total Construction Contract Claims	2	8	8	16	-	-	-	-	-	-	50
<b>Contract Acceptance, Final Construction Estimate and Final Report</b>											
295.35 - Certificate of Environmental Compliance	8	40	160	16	-	-	-	-	-	-	16
295.40 - Long Term Env Mit/Mon after CCA	8	40	160	16	-	-	-	-	-	-	224
Total Final Construction	8	40	160	16	-	-	-	-	-	-	240
Total Project Hours	230	1,448	1,276	1,576	48	115	-	-	64	220	4,975
											2.80 PY

**Attachment C**  
**Summary of Mitigation Costs/Permits/Consultations/Timelines**

Summary of Permits/Consultations & Estimated Timeframes for SR 255 EFS

Segment 1 Features (see Note below)	Permits										Consultations									
	USA/C - 404 no cost	HARRIS/D 453K no cost	CCC - CDP no cost	City of Enola - CDP 453K	CA DFG - 1600 453K	RW/CES - 401 453K	Sec 7 NOA/ USFWS - no cost	Section 106 - no cost	City of Arcata - CDP 453K	Hum. Co. - CDP 453K	State Lands Commission no cost	Wetland Mit. @ \$30K/acre	EIR/EIS	Native American	Sec 7 NOA/ USFWS	Coastal Comm.	Sec 4(f)	Sec 106 SHP/T/HP	Dfg Consistency	
1.1 Class I, Widening w/ New Fdn	P	P	P	P	P	P				P	P	\$453K*	EIR/EIS 36 months							
1.2 Class II, Widening w/ New Fdn	P	P	P	P	P	P				P	P	\$160K*								
1.3 Class I, Widening w/ Pier Cap Ext.	P	P	P	P	P	P				P	P	\$429K*						✓		
1.4 Class II, Widening w/ Pier Cap Ext.	P	P	P	P	P	P				P	P	\$462K								
1.5 Class I, 2nd Level Deck	P	P	P	P	P	P				P	P	No cost estimates prepared due to extreme lack of feasibility.								
1.6 Class I, Cant. Deck	P	P	P	P	P	P				P	P									
1.7 Class II, Widen Shoulders w/ Cant. Deck	P	P	P	P	P	P				P	P									
<b>Segment 2 (Manila Trans. Enhancements in Orange)</b>																				
Initial Improvements (work w/in existing roadway, exempt from CDP)	P					P				P		n/a		CE/CE 8-10 mos (if Sec 7/PSI req'd, closer to 18 mos)						
Initial Improvements (require some widening/disturbance )	P					P				P		Ave. \$50K (per improvem.)						✓		
Future Improvements	P					P				P		Roundabout (±\$2M ea.) /Signal (\$218K ea.) / Elev. Ped Xing (\$66K ea.)	ND/CE - 20 mos; ND/FONSI - 28 mos; EIR/EIS - 36 mos					✓		
Feature 2.1 Class 1, Separated Path (north)	P					P				P		\$627K	ND/FONSI - 28 mos; EIR/EIS - 36 mos				✓		✓	

C

	USACE - 404	NRHRCO	CCC - CDP	City of Bakers - CDP	CA DFG - 1600	RWQCB - 401	Sec 7 NOIA/ USFWS	Section 106	City of Arcata - CDP	Hum. Co. - CDP	State Lands Commission		Native American	Sec 7 NOIA/ USFWS	Coastal Comm.	Sec 4(f)	Sec 106 SHPQ/THPO	DFG Consistency	
Feature 2.2, Class I, Separated Path (South)	P					P	P			P		\$396K	ND/FONSI - 28 mos; EIR/EIS - 36 mos.	✓	✓	✓	✓	✓	
Feature 2.3 Class I, Contiguous	P					P	P			P		\$1.5M	ND/FONSI - 28 mos.	✓	✓	✓	✓	✓	
Feature 2.4, Class II Bikeway (no widening)												n/a	CE/CE						
<b>Segment 3</b>																			
Feature 3.1, Class II, Shoulder Widening	P					P	P			P		\$1M	ND/FONSI - 28 mos; EIR/EIS - 36 mos.	✓	✓	✓	✓	✓	
Feature 3.2, Class I Separated Path	P					P	P			P		\$1.4M		✓	✓	✓	✓	✓	
Feature 3.3, Class I Contiguous	P					P	P			P		\$858K		✓	✓	✓	✓	✓	
<b>Segment 4</b>																			
Feature 4.1, Class I, Separated Path	P					P	P			P		\$429K		✓	✓	✓	✓	✓	
Feature 4.2, Class I, Separated Path w/ Lane Width Reduction	P					P	P			P		\$429K	ND/FONSI - 28 mos; EIR/EIS - 36 mos.						
Feature 4.3, Class II, Shoulder Widening	P					P	P			P		\$99K		✓	✓	✓	✓	✓	

Note: CDPs from CCC/City/County can be consolidated (only where jurisdiction is shared)

Preferred Segment 1 alternative

P = Permit Required  
CEQA/NEPA

NEPA CE = Finding of No Significant Impact

CEQA CE = Categorical Exemption; ND = Negative Declaration (or Mitigated Negative Declaration, more likely in this case)

\* = mitigation cost; does not include area over water (eelgrass getting shaded by very high structures or lower approaches? Could add addl. cost)

## Attachment D: PEAR Environmental Commitments Cost Estimate

Standard PSR Only

(Prepare a separate form for each viable alternative described in the Project Study Report)

### PART 1 PROJECT INFORMATION

*rev. 11/08*

District-County-Route-Post Mile HUM-255-0.0/8.3	EA: 01-0B030K
Project Description: SR 255 Engineered Feasibility Study	
Form completed by (Name/District Office): Alyson Hunter, District 1	
Project Manager: Rex Jackman	Phone Number: 441-5739
Date: 3/09/12	

### PART 2 PERMITS AND AGREEMENTS

	Permits and Agreements (\$\$)
<input checked="" type="checkbox"/> Fish and Game 1602 Agreement	5000
<input checked="" type="checkbox"/> Coastal Development Permit	0
<input type="checkbox"/> State Lands Agreement	00
<input checked="" type="checkbox"/> Section 401 Water Quality Certification	5000
<input checked="" type="checkbox"/> Section 404 Permit – Nationwide (U.S. Army Corps)	0
<input type="checkbox"/> Section 404 Permit – Individual (U.S. Army Corps)	00
<input type="checkbox"/> Section 10 Navigable Waters Permit (U.S. Army Corps)	
<input type="checkbox"/> Section 9 Permit (U.S. Coast Guard)	00
<input checked="" type="checkbox"/> Other: Local CDP, Constr. Easement from RR	5000
<b>Total (enter zeros if no cost)</b>	<b>15000</b>

**PART 3. ENVIRONMENTAL COMMITMENTS FOR PERMANENT IMPACTS**

To complete the following information:

- Report costs in \$1,000s.
- Include all costs to complete the commitment:
  - Capital outlay and staff support. Refer to Estimated Resources by WBS Code. For example, if you estimated 80 hours for biological monitoring (WBS 235.35 Long Term Mitigation Monitoring), convert those hours to a dollar amount for this entry. For current conversion rates from PY to dollars, see the Project Manager.
  - Cost of right of way or easements.
  - If compensatory mitigation is anticipated (for wetlands, for example), insert a range for purchasing credits in a mitigation bank.
  - Long-term monitoring and reporting
  - Any follow-up maintenance
  - Use current costs; the Project Manager will add an appropriate escalation factor.
  - This is an estimating tool, so a range is not only acceptable, but advisable.

<b>Environmental Commitments Alternative (average)</b>		
	Estimated Cost in \$1,000's	Notes
Noise abatement or mitigation	0	
Special landscaping	100000	Segment 2
Archaeological resources	0	
Biological resources	0	
Historical resources		
Scenic resources	0	
Wetland/riparian resources	330000	All segments
Res./bus. relocations	0	
Other: Fish Pass.	0	
<b>Total (enter zeros if no cost)</b>	<b>430000</b>	

**Attachment E**  
**USFWS Threatened & Endangered Listing (Eureka Quad)**

**Listed/Proposed Threatened and Endangered Species for  
the EUREKA Quad (Candidates Included)**

March 9, 2012

Document number: 292396885-92023

**KEY:**

(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction

(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future

(E) Endangered Listed in the Federal Register as being in danger of extinction

(T) Threatened Listed as likely to become endangered within the foreseeable future

(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated

\* Denotes a species Listed by the National Marine Fisheries Service

Type	Scientific Name	Common Name	Category	Critical Habitat
<b>Plants</b>				
	<i>Erysimum menziesii</i>	Menzies' wallflower	E	N
	<i>Layia carnosa</i>	beach layia	E	N
	<i>Lilium occidentale</i>	western lily	E	N
<b>Invertebrates</b>				
*	<i>Haliotis cracherodii</i>	black abalone	E	N
<b>Fish</b>				
*	<i>Acipenser medirostris</i>	green sturgeon	T	Y
	<i>Eucyclogobius newberryi</i>	tidewater goby	E	Y
*	<i>Oncorhynchus kisutch</i>	S. OR/N. CA coho salmon	T	Y
*	<i>Oncorhynchus mykiss</i>	Northern California steelhead	T	Y
*	<i>Oncorhynchus tshawytscha</i>	CA coastal chinook salmon	T	Y
<b>Reptiles</b>				
*	<i>Caretta caretta</i>	loggerhead turtle	T	N
*	<i>Chelonia mydas (incl. agassizi)</i>	green turtle	T	N
*	<i>Dermochelys coriacea</i>	leatherback turtle	E	Y
*	<i>Lepidochelys olivacea</i>	olive (=Pacific) ridley sea turtle	T	N
<b>Birds</b>				
	<i>Brachyramphus marmoratus</i>	marbled murrelet	T	Y
	<i>Charadrius alexandrinus nivosus</i>	western snowy plover	T	Y
	<i>Coccyzus americanus</i>	Western yellow-billed cuckoo	C	N
	<i>Phoebastris albatrus</i>	short-tailed albatross	E	N
	<i>Strix occidentalis caurina</i>	northern spotted owl	T	Y
	<i>Synthliboramphus hypoleucus</i>	Xantus's murrelet	C	N
<b>Mammals</b>				
*	<i>Balaenoptera borealis</i>	sei whale	E	N
*	<i>Balaenoptera musculus</i>	blue whale	E	N
*	<i>Balaenoptera physalus</i>	fin whale	E	N
*	<i>Eumetopias jubatus</i>	Steller (=northern) sea-lion	T	Y
*	<i>Megaptera novaengliae</i>	humpback whale	E	N
*	<i>Orcinus orca</i>	killer whale, S. resident	E	Y
*	<i>Physeter macrocephalus</i>	sperm whale	E	N

**Attachment F**  
**CA Natural Diversity Database (Eureka Quad)**

Print table Export entire table to a text file Close window

Results for EUREKA Quad (4012472) - 36 elements selected

Record	QUADNAME	ELMCODE	SCINAME	COMNAME	FEDSTATUS	CALSTATUS	DEGSTATUS	RAREPLANTRANK
1	Eureka	ABNGA04010	Ardea herodias	great blue heron	None	None		
2	Eureka	ABNGA04040	Ardea alba	great egret	None	None		
3	Eureka	ABNGA06030	Egretta thula	snowy egret	None	None		
4	Eureka	ABNGA11010	Nycticorax nycticorax	black-crowned night heron	None	None		
5	Eureka	ABNKC01010	Pandion haliaetus	osprey	None	None	WL	
6	Eureka	ABNME05016	Rallus longirostris obsoletus	California clapper rail	Endangered	Endangered	FP	
7	Eureka	ABNNB03031	Charadrius alexandrinus nivosus	western snowy plover	Threatened	None	SSC	
8	Eureka	AFCAA01030	Acipenser medirostris	green sturgeon	Threatened	None	SSC	
9	Eureka	AFCHA0208A	Oncorhynchus clarkii clarkii	coast cutthroat trout	None	None	SSC	
10	Eureka	AFCQN04010	Eucyclogobius newberryi	tidewater goby	Endangered	None	SSC	
11	Eureka	CTT52110CA	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None		
12	Eureka	IICOL02101	Cicindela hirticollis gravida	sandy beach tiger beetle	None	None		
13	Eureka	PDAST5N010	Layia carnea	beach layia	Endangered	Endangered	1B.1	
14	Eureka	PDASTE5011	Hespererax sparsiflora var. brevifolia	short-leaved evax	None	None	1B.2	
15	Eureka	PDBRA160E2	Erysimum menziesii ssp. eurekaense	Humboldt Bay wallflower	Endangered	Endangered	1B.1	
16	Eureka	PDCAR0W032	Spergularia canadensis var. occidentalis	western sand-spurrey	None	None	2.1	
17	Eureka	PDFAB0F7B2	Astragalus pycnostachyus var. pycnostachyus	coastal marsh milk-veitch	None	None	1B.2	
18	Eureka	PDFAB250C0	Lathyrus japonicus	seaside pea	None	None	2.1	
19	Eureka	PDFAB250P0	Lathyrus palustris	marsh pea	None	None	2.2	
20	Eureka	PDMAL110E0	Sidalcea malachroides	maple-leaved checkerbloom	None	None	4.2	
21	Eureka	PDMAL110F9	Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	1B.2	
22	Eureka	PDMAL110K9	Sidalcea oregana ssp. eximia	coast sidalcea	None	None	1B.2	
23	Eureka	PDMON03030	Monotropa uniflora	ghost-pipe	None	None	2.2	
24	Eureka	PDNYC010N2	Abronia umbellata var. breviflora	pink sand-verbena	None	None	1B.1	
25	Eureka	PDONA0C1K0	Oenothera wolffii	Wolf's evening-primrose	None	None	1B.1	
26	Eureka	PDPLM040B6	Gilia capitata ssp. pacifica	Pacific gilia	None	None	1B.2	
27	Eureka	PDPLM04130	Gilia millefoliata	dark-eyed gilia	None	None	1B.2	
28	Eureka	PDFOR05070	Montia howellii	Howell's montia	None	None	2.2	
29	Eureka	PDSCR0D012	Castilleja affinis ssp. litoralis	Oregon coast paintbrush	None	None	2.2	
30	Eureka	PDSCR0D402	Castilleja ambigua ssp. humboldtensis	Humboldt Bay owl's-clover	None	None	1B.2	
31	Eureka	PDSCR0J0C3	Chloropyron maritimum ssp. palustre	Point Reyes bird's-beak	None	None	1B.2	
32	Eureka	PDVIO041G0	Viola palustris	alpine marsh violet	None	None	2.2	
33	Eureka	PMCCYP030X0	Carex arctica	northern clustered sedge	None	None	2.2	
34	Eureka	PMCCYP037Y0	Carex lyngbyei	Lyngbye's sedge	None	None	2.2	
35	Eureka	PMCCYP03B20	Carex praticola	northern meadow sedge	None	None	2.2	
36	Eureka	PMLILOU0F0	Erythronium revolutum	coast fawn lily	None	None	2.2	

Print table Export entire table to a text file Close window

**Attachment G**  
**CA Native Plant Society Inventory of Rare/Endangered Plants (Eureka Quad)**



## Inventory of Rare and Endangered Plants

v7-12feb 2-21-12

**Status:** search results for "+Eureka (672C) 4012472" - Fri, Mar. 9, 2012, 11:12 b



**Tip:** Want to search by habitat? Try the **Checkbox and Preset** search page.[all tips and help.]  
[search history]

**Hits 1 to 20 of 22**

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.




Selections will appear in a new window.

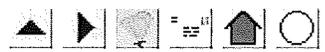
open	save	hits	scientific	common	family	CNPS
	<input type="checkbox"/>	1	<b><u>Abronia umbellata</u> var. <u>breviflora</u></b>	pink sand-verbena	Nyctaginaceae	List 1B.1
	<input type="checkbox"/>	1	<b><u>Astragalus pycnostachyus</u> var. <u>pycnostachyus</u></b>	coastal marsh milk-vetch	Fabaceae	List 1B.2
	<input type="checkbox"/>	1	<b><u>Carex arcta</u></b>	northern clustered sedge	Cyperaceae	List 2.2
	<input type="checkbox"/>	1	<b><u>Carex lyngbyei</u></b>	Lyngbye's sedge	Cyperaceae	List 2.2
	<input type="checkbox"/>	1	<b><u>Carex praticola</u></b>	northern meadow sedge	Cyperaceae	List 2.2
	<input type="checkbox"/>	1	<b><u>Castilleja affinis</u> ssp. <u>litoralis</u></b>	Oregon coast paintbrush	Orobanchaceae	List 2.2
	<input type="checkbox"/>	1	<b><u>Castilleja ambigua</u> ssp. <u>humboldtensis</u></b>	Humboldt Bay owl's-clover	Orobanchaceae	List 1B.2
	<input type="checkbox"/>	1	<b><u>Chloropyron maritimum</u> ssp. <u>palustre</u></b>	Point Reyes bird's-beak	Orobanchaceae	List 1B.2
	<input type="checkbox"/>	1	<b><u>Erysimum menziesii</u> ssp. <u>eurekense</u></b>	Humboldt Bay wallflower	Brassicaceae	List 1B.1
	<input type="checkbox"/>	1	<b><u>Erythronium revolutum</u></b>	coast fawn lily	Liliaceae	List 2.2
	<input type="checkbox"/>	1	<b><u>Gilia capitata</u> ssp. <u>pacifica</u></b>	Pacific gilia	Polemoniaceae	List 1B.2
	<input type="checkbox"/>	1	<b><u>Gilia millefoliata</u></b>	dark-eyed gilia	Polemoniaceae	List 1B.2
	<input type="checkbox"/>	1	<b><u>Hesperevax sparsiflora</u> var. <u>brevifolia</u></b>	short-leaved evax	Asteraceae	List 1B.2
	<input type="checkbox"/>	1	<b><u>Lathyrus japonicus</u></b>	seaside pea	Fabaceae	List 2.1
	<input type="checkbox"/>	1	<b><u>Lathyrus palustris</u></b>	marsh pea	Fabaceae	List 2.2
	<input type="checkbox"/>	1	<b><u>Layia carnosa</u></b>	beach layia	Asteraceae	List 1B.1
		1	<b><u>Lilium occidentale</u></b>	western lily	Liliaceae	List

	<input type="checkbox"/>					1B.1
	<input type="checkbox"/>	1	<b>Monotropa uniflora</b>	ghost-pipe	Ericaceae	List 2.2
	<input type="checkbox"/>	1	<b>Montia howellii</b>	Howell's montia	Montiaceae	List 2.2
	<input type="checkbox"/>	1	<b>Oenothera wolfii</b>	Wolf's evening-primrose	Onagraceae	List 1B.1

To save selected records for later study, click the ADD button.

Selections will appear in a new window.

For more results click below:



# **ATTACHMENT K**

## **REFERENCES**

# Attachment K

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## References

Through Manila, the non-motorized traffic improvement aspect of this study reviewed all modes of non-motorized traffic. Outside of this segment, the focus of the study was concentrated primarily on opportunities for bicycle improvements. As such, the background information in the first subsection below firstly provides an overview of previous regional bicycle and pedestrian master planning efforts by other agencies and secondly, describes the non-motorized user needs identified within the Manila Community.

Over the years, several public agencies and private organizations in the greater Eureka/Arcata area have worked toward developing a multiuse trail between the two cities. From the efforts of these outside partners, numerous segments of the SR 255 corridor have been identified as having potential for providing an alternate route around Humboldt Bay. Some of the partner's reports have envisioned using a portion of the State's right of way for non-motorized improvements between the two cities. Other proposals have included using a portion of the corridor as a means of providing access to improvements outside of the State right of way such as local, linear parks and Rails with Trails projects. **The focus of this study is to evaluate a full range of improvements that can be constructed within the State right of way and to consider how these improvements may fit with other more regional efforts.**

As such, this document has referenced several reports and studies generated by other agencies. These previous works, as they relate to this study, are discussed below.

### **Humboldt Bay Trails Feasibility Study (2001)**

The 2001 Humboldt Bay Trails Feasibility Study describes numerous potential non-motorized improvements along the peninsula. However, this document predates most of the current plans and not all of the improvements of that study have been incorporated into the more recent efforts. Consequently, it appears that these concepts have been abandoned.

### **City of Arcata Pedestrian and Bicycle Master Plan (2010)**

In 2010, the City of Arcata adopted a Pedestrian and Bicycle Master Plan Update, which would act independent of the HCAOG plan. The purpose of the City's Plan is to set funding priorities for pedestrian and bicycle improvements and to act as a resource and coordinating document. This document is needed to support the community's vision of creating and maintaining a balanced transportation system.

Most of the projects identified in the City of Arcata's latest plan are outside of the limits of this study. One exception to this is the City's 11<sup>th</sup> Street Corridor project which terminates at the intersection of SR 255 and V Street. The City's Plan identifies this as being a Class II/III type route and has identified this project as having the 4<sup>th</sup> highest priority. This bikeway project is relevant to this study because the route ties into HUM 255 and providing connectivity to the regional system is an objective of this study.

A second project identified would be an extension of the Hammond Trail from Mad River Bridge, across the Arcata Bottoms and terminating at the Jackson Road-SR 255 intersection. This project is 11<sup>th</sup> on the City Plan's priority list and identifies this route as a Class I and II type route. This project is relevant to this study because the route ties into HUM 255 and could also provide improved connectivity to the regional system.

A third project that lies within the study limits is the Samoa Gateway Project. This project was funded through the American Recovery and Reinvestment Act (ARRA) in early 2010 and is currently obtaining final approvals and permits. The focus of the Gateway Project improvements is along the portion of SR 255 between the railroad crossing just west of K Street and the 101/255 interchange. The scope of the work includes lane reduction using medians and curb treatments, adding new landscaping, sidewalks and gateway signage. The project will also add a Class II type bike way along most of the route. West of the railroad crossing a minimal amount of signing and striping work is proposed. This project is being evaluated in this study because the limits of the study and the project overlap.

The fourth project identified in the Plan calls for the installation of "Share the Road" signs along SR 255 from the west city limits to K Street. This sign project was identified as being ranked 8<sup>th</sup> on the priority list. The City's intent of this project is to develop a network of Class III Bikeway routes.

### **2008 Regional Transportation Plan (RTP)**

The 2008 Regional Transportation Plan (RTP) developed by the Humboldt County Association of Governments (HCAOG) provides a regional plan for multiple modes of travel throughout the county and identifies locations where these improvements are a priority. This 20-year plan, which is updated every 2 years, also serves to satisfy the prerequisites that communities need to become eligible for transportation funding. The plan incorporates the findings of other HCAOG and local agency plans such as the 2008 HCAOG Regional Pedestrian Needs Assessment Study Update, the 2004 HCAOG Regional Bicycle Transportation Plan Update and the Arcata Pedestrian and Bicycle Plan (2010). Between these studies numerous locations along the SR 255 corridor have been identified as having potential for non-motorized improvements. These locations and their priority in the study in which they were discussed are tabulated below.

Summary of other Study's Proposed Improvements along HUM 255, PM 0.0/8.8

<b>Segment of 255</b>	<b>Type of facility</b>	<b>Local Jurisdiction</b>	<b>Priority<sup>1</sup></b>	<b>Source</b>
Lupin to Pacific PM 3.64/3.94	Crosswalks	Manila	Long-term	2008 RTP & HCRPP <sup>2</sup>
K thru H Street (Arcata)	Class II Bikeway	Arcata	High Priority	2008 RTP
Entire Route PM 0.0/8.8	Class III Bikeway	Multiple	Long-term	2008 RTP & 2004 RBTP <sup>4</sup>
Entirety of Manila	Multiple <sup>3</sup>	Manila	N/A	MCS D TP P I & II <sup>5</sup>
At I Street (Arcata)	Crosswalk, ramps	Arcata	Intermediate term (Phase 2)	HCRPP

1. Priority per 2008 Regional Pedestrian Plan, 2008 Regional Transportation Plan or 2004 Regional Bicycle Transportation Plan
2. Humboldt County Regional Pedestrian Plan (HCAOG)
3. Multiple types of facilities are recommended (roundabouts, crosswalks, bike & ped paths etc)
4. Regional Bicycle Transportation Plan (HCAOG)
5. Manila Community Service District Transportation Plan, Phase I & II

In the 2008 Regional Pedestrian Plan, the prioritization of pedestrian improvements along the SR 255 corridor is described. In particular, the Regional Pedestrian Plan identifies the need for crosswalks/curb ramps at the intersection of I Street and Samoa Boulevard in Arcata and crosswalks with crossing beacon lights at the SR 255 intersections of Lupin and Pacific Avenues in Manila. These two projects are both identified as Phase II candidates of the implementation plan for the 2008 Regional Pedestrian Plan.

Also mentioned is a Humboldt Bay Trail-West Bay Project in two previous plans. The first occurrence was in the Humboldt County Regional Bicycle Transportation Plan (2004). In that plan, the project was listed in the Proposed Facilities Table and again in Appendix C of that plan, in which the project was ranked against other projects in the region. From information contained within the former table, the project is described as extending from Arcata to Samoa with possible extension to Fairhaven. The proposed facility would be a Class I bikeway and would be 7.2 miles long. However, no discussion or further details are provided within that plan and therefore, it is unclear if this proposed facility would be constructed along the State or railroad right of ways or some other corridor. The same proposed facility is mentioned in the 2008 Regional Transportation Plan, but details on the proposed project are also missing within that document. HCAOG and Redwood Community Action Agency (RCAA) have both confirmed that no further information was considered for this proposed facility.

### **Manila Community Transportation Plan (2005)**

In 2002, the Manila Community Service District (MCS D) retained the services of a private consultant to study the transportation needs of the community. This study, which had two phases, was titled Manila Community Transportation Plan. Phase I was completed in 2003 and was funded by HCAOG Overall Work Program (OWP) resources. The primary purpose of this phase was to define and document the community's transportation problems through both public outreach efforts and review of field conditions. Phase II of the MCS D study was finalized in 2005 and was funded by HCAOG and Caltrans. The primary purpose of this phase was to present alternatives and make recommendations that set goals to resolve the issues identified in Phase I. The goals defined in the Manila Community Transportation Plan are:

- Reduce the speed of traffic on State Route 255 through Manila
- Provide enhanced pedestrian crossing facilities across State Route 255
- Increase accessibility from SR 255 to local streets

Additionally, Phase II of the MCS D plan recommended the following improvements:

- Installing medians
- Installing Share the Road and Pedestrian Crossing signage
- Installing vehicle speed feedback signs
- Providing flashing lights at pedestrian crossings
- Consider roundabouts
- Install pedestrian path between Lupin and Pacific Avenues

### **Samoa Town Master Plan and Master Environmental Impact Report (2007)**

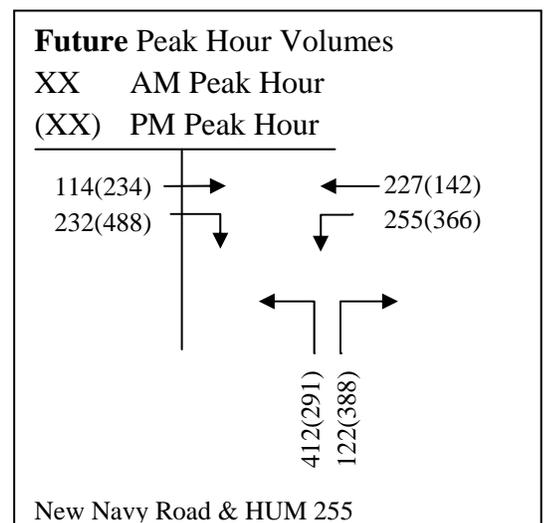
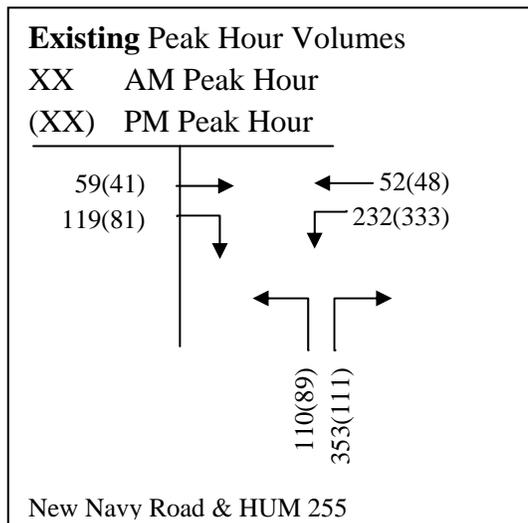
The 4 phases of development in the Samoa Town Master Plan outline the eventual conversion of this former company town into a community of individually owned properties. Ultimately, the 174 acres that comprise the area will include either upgraded or new infrastructure that will support the expansion of the existing land uses. The primary land use change is the proposed addition of up to 307 residential units. Commercial, industrial, recreational and conservational zoning changes are also proposed.

As part of the Samoa Town Master Plan, a Master Environmental Impact Report (MEIR) was prepared. This report analyzed the impacts that the redevelopment of Samoa would have on the area and proposed improvements to mitigate these effects. Transportation was one such impact classification examined in that document and is the focus of this study's review of the MEIR.

The first affected area described in the MEIR and pertinent to this study is the segment of HUM 255 passing through Manila. Along this segment, the MEIR projects a decrease in the Level of Service (LOS) at the intersections of HUM 255 with Pacific/Dean and Lupin Avenue as traffic volumes increase by the effects of both redeveloping Samoa and projected traffic volume growth independent of Samoa redevelopment. The decreases in LOS are highlighted in the table below. The MEIR estimates the critical peak hour traffic volume in Manila will increase by 258 vehicles as a direct result of Samoa redevelopment. Language in the MEIR, recommends mitigation for these impacts with a 22.5% cost sharing of select improvements proposed in the Manila Community Transportation Plan.

	EXISTING LOS		FUTURE LOS	
	AM	PM	AM	PM
255/Navy Base Road (PM 2.0)	D	C	E	D
255/DEAN/PACIFIC (PM 3.64)				
NORTHBOUND	C	D	C	E
SOUTHBOUND	C	D	C	D
255/LUPIN (PM 3.94)				
NORTHBOUND	C	D	C	D
SOUTHBOUND	C	C	C	D

The second affected area described in the MEIR that has relevance to this study is the intersection of New Navy Road and HUM 255 at post mile 1.7. At this point the highway and the road meet to form a T-intersection. The MEIR projects a decrease in the Level of Service (LOS) at this intersection as traffic volumes increase by the effects of both redeveloping Samoa and a projected traffic volume growth independent of Samoa redevelopment. The decreases in LOS are highlighted in the table above. Directional peak hour traffic volumes are presented in the two graphics below. To mitigate these effects the MEIR recommends either the construction of a roundabout or installation of a signal at this intersection. The MEIR recommends that the developer of Samoa provide full funding for these improvements. The MEIR suggests that these improvements would not be warranted in the early phases of the Samoa Town Master Plan.



## **Humboldt County Coastal Trail Implementation Strategy Report (October 2010 Draft)**

The Humboldt County Coastal Trail Implementation Strategy Report was initiated to study implementation of the California Coastal Trail (CCT) through Humboldt County. The primary goal of the CCT is to establish a continuous trail stretching the full length of the California Coastline, but a secondary goal is to also provide connectivity to destinations and amenities along the coast as well. With respect to this study, Caltrans and Humboldt County CCT developers met and discussed opportunities along the HUM 255 right of way. Points of discussion included the connectivity of proposed CCT routes with trails being studied along HUM 255 and pedestrian access over the Samoa Bridges. The former is important along the segment of HUM 255 that passes along the bottoms and the later is critical to the ability of the CCT document to recommend use of these structures by pedestrians.

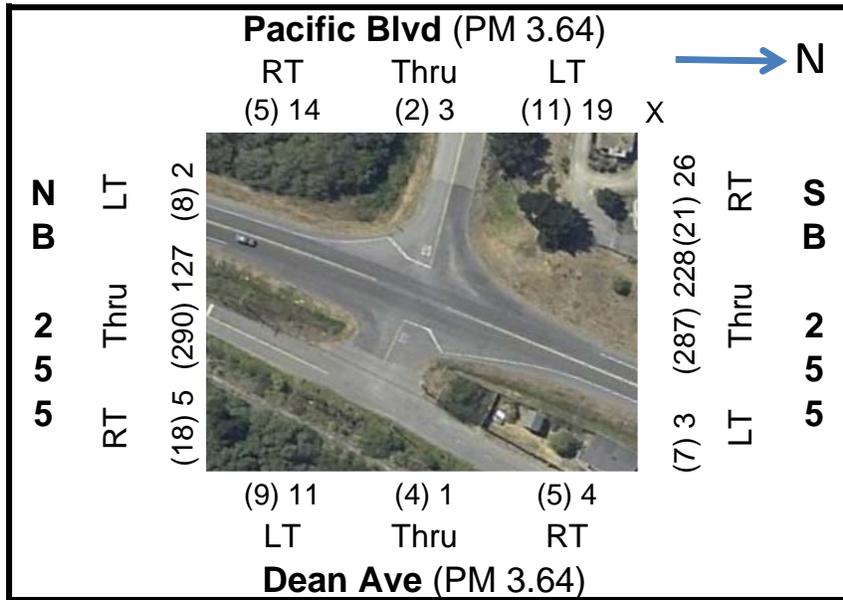
In summary, numerous studies have considered non-motorized improvements along the SR 255 corridor. The Regional Transportation Plan draws on the findings of these previous works and serves as a master plan for all of the transportation needs of the region. In these previous studies, most of the proposed projects along the corridor are focused on pedestrian improvements such as crosswalks and curb ramps, but a fair amount of consideration has also been directed toward the potential of a Class III Bikeway, which would in some cases connect to other facilities outside of the State right of way. Although a Class I Bikeway was briefly mentioned in two previous plans, the concept of the proposed Class I facility was not studied in detail within the scope of those plans.

# **ATTACHMENT L**

## **TRAFFIC COUNTS**

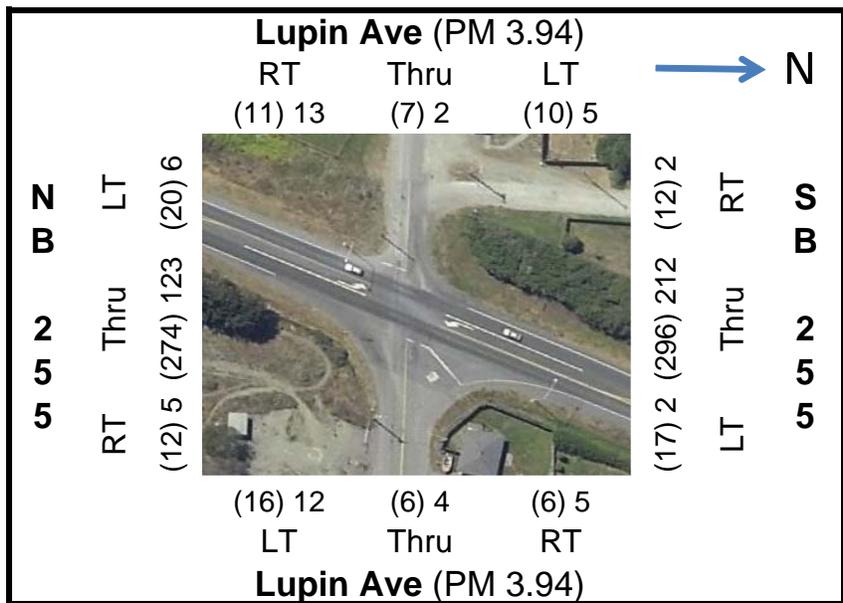
# Peak Hour Traffic Volumes

Manila Transportation Plan (2005)



(PM Peak Hour Volume)

AM Peak Hour Volume



(PM Peak Hour Volume)

AM Peak Hour Volume

## Non-motorized Traffic Count - Data Set Summary Sheet

**Site Name:** MANILA  
**Camera No.** 1  
**Site Location:** HWY 255 @ Lupin Drive (Manila)  
**Photo Log Location:** Frame = 297 (HUM 255 N)

**Time of Installation:** 8/13/2010 12:32  
**Personnel:** DAK, OFG  
**Time of Take-down:** 8/16/2010 14:14  
**Personnel:** DAK  
**Total Time Installed:** 74 hours

**Design Day Start:** 06:00  
**Design Day End:** 19:00

**Sampling Interval Start:** 8/13/10 14:00  
**Sampling Interval End:** 8/16/10 14:00

**Total Time Sampled:** 39 hours  
**Total Memory Used:** 535 MB  
**% Data Completeness:** 99%

**Camera Type / Lens:** BW / 3.6 mm  
**Video Size:** 320 x 240  
**Frame Rate:** 10 fps  
**Resolution:** Low

**Date(s) Processed:** ---  
**Data Processor:** TMW

**Date(s) Checked:** ---  
**Data Checker:** DAK

**Total Ped Events:** 96  
**Total Cyclist Events:** 94

### Legend:

 Data missing this interval  
 No recorded data  
 Recorded data outside sampling interval

---

**Notes:**

# Digital Data Collection Survey

Location     Manila, Humboldt County

Route        SR 255

PM           3.9

Crossroad   Lupin

Survey Dates

8/13/2010 14:00

to

8/16/2010 14:00

	PEDESTRIAN			CYCLIST			CYCLIST			CYCLIST			CYCLIST			CYCLIST								
	N-bound	S-bound	E-W	From Hwy. 255			From Hwy. 255			From Lupin Dr.			From Lupin Dr.			total	total	helmet	helmet	helmet				
	thru	thru	cross	(Northbound)			(Southbound)			(Westbound)			(Eastbound)			commute	touring	yes	no	n/d				
	Left	thru	Right	Left	thru	Right	Left	thru	Right	Left	thru	Right	Left	thru	Right									
<u>TOTAL</u>	3	1	92	4	25	1	2	13	4	1	14	2	7	10	11	92	2	31	15	48				
<b>TOTAL PEDESTRIANS</b>	<b>96</b>																				<b>TOTAL CYCLISTS</b>	<b>94</b>		

## Memorandum

*Flex your power!  
Be energy efficient!*

To: **BRIAN SIMON**  
Project Engineer, Advance Planning  
District 1

Date: April 30, 2009

File: 01-HUM-255-PM 0.0/8.3  
HUM 255 Feasibility Study  
EA 01-48940K

From: **TROY ARSENEAU**   
Chief, Traffic Operations  
California Department of Transportation - District 1

Subject: Pedestrian, Bicycle & Vehicle Counts, Vehicular Gap Study, and Signal Warrant Analysis.

In response to your request, this office conducted a traffic operational study of the State Route (SR) 255 intersections at Lupin/Victor and Dean/Pacific in the community of Manila. Pedestrian, bicycle, and vehicle volume counts were conducted on April 9, 2009 (see attachment), and an analysis of signal and pedestrian warrants was completed. Currently no signal, pedestrian, or flashing beacon warrants are met at this time. Following is a summary of our findings.

State Route 255 passes through the community of Manila with a speed limit of 55 mph. A study completed in 2005 by W-Trans evaluated the transportation on and off the highway in the Manila area. The W-Trans study revealed that traffic calming was highly desired by community residents through the Manila corridor. The study examined possible future improvements to the highway within the community corridor that could calm traffic and better facilitate pedestrian and bicycle traffic. No warrants were satisfied at the time of the W-Trans study, and our analysis indicated that traffic volumes and multimodal use have not changed significantly since the 2005 study was completed.

Our Traffic counts revealed that pedestrian and bicycle volumes crossing and traversing the highway were minimal. School-age children in the vicinity were observed to be picked up by bus on either side of SR 255, so very few children crossed the highway. The minimum threshold for pedestrian volumes (20 pedestrians per hour) was not met for the new High-intensity Activated crossWalk (HAWK) pedestrian signal being proposed in the 2009 MUTCD. Using a pedestrian clearance time based on a walking speed of 3.5 feet per second, the time needed to cross the highway at the intersections is about 15 seconds. Traffic platoons were seen passing through this area which kept the gaps in the

mainline traffic large enough for pedestrians to cross. The longest pedestrian wait time observed during the counting period was approximately 15 seconds.

Based on current traffic volumes and collision records, no intersection improvements for pedestrians or vehicles are recommended at this time within the highway segment between the two intersections.

If you have any questions, please contact Scott Lezchuk at (707) 441-5734

TAA / sdl

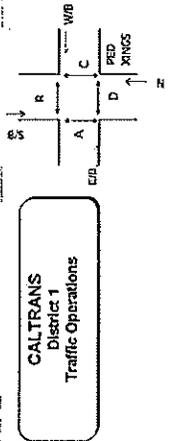
Attachments: Lupin-Pacific / SR 255, Dean-Pacific / SR 255 - Hourly Vehicle/Ped Counts

# "HOURLY VOLUMES" TABULAR SUMMARY OF VEHICLE/PED COUNTS

COUNT DATE: 4/20/2009  
 SOL: P.W.H.C.W.S.E.R.B.  
 CITY: Luglin  
 COUNTY: Mingo

TIME	255 (from South)				255 (from North)				Luglin				WB				Luglin				WB				TOTAL VEH	TOTAL VEH	ALL
	NB		SB		NB		SB		EB		WB		WB		WB		WB		WB		WB		East	West			
	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped	Total	Ped					
0700	2	120	3	161	2	164	2	209	7	1	9	17	0	9	2	4	15	0	30	0	30	321	321				
0715	6	134	6	146	3	201	2	347	9	2	11	21	0	12	3	9	23	0	42	0	42	308	308				
0730	7	168	7	174	2	231	5	238	8	1	11	21	0	11	2	7	23	0	44	0	44	400	400				
0745	10	146	6	162	3	208	4	204	12	1	7	20	0	12	2	6	20	0	40	0	40	386	386				
0800	11	126	6	143	1	201	5	206	12	2	4	18	0	10	1	7	18	0	36	0	36	341	341				
0815	5	117	5	130	1	177	4	186	12	1	2	15	0	7	1	4	12	0	27	0	27	306	306				
0830	5	87	3	95	1	149	4	156	10	1	2	13	0	8	0	4	12	0	24	0	24	244	244				
0845	3	84	5	82	0	131	4	130	4	1	1	5	0	6	0	4	12	0	24	0	24	222	222				
0900	2	86	4	94	0	138	3	144	1	0	3	4	0	12	0	4	16	0	20	0	20	231	231				
0915	3	96	6	107	0	147	3	154	2	1	5	8	0	12	0	4	16	0	20	0	20	250	250				
0930	5	104	6	121	0	150	2	156	3	1	7	11	0	12	4	3	19	0	26	0	26	267	267				
0945	7	105	7	119	0	158	2	164	5	1	12	19	0	10	4	2	16	0	34	0	34	317	317				
1000	13	108	10	131	0	179	3	184	6	1	15	23	0	5	4	4	13	0	36	0	36	351	351				
1015	14	110	5	125	0	194	5	199	6	0	17	25	0	8	4	6	18	0	41	0	41	385	385				
1030	9	130	12	151	0	189	9	203	6	5	16	27	0	9	2	6	16	0	42	0	42	397	397				
1045	7	141	11	159	0	198	9	212	6	5	16	27	1	8	2	5	16	0	43	0	43	414	414				
1200	6	141	11	158	0	199	10	213	6	6	15	20	1	11	2	6	19	0	48	0	48	419	419				
1215	9	137	10	156	0	195	7	207	6	5	13	24	1	10	2	6	19	0	45	0	45	405	405				
1230	10	132	10	152	0	186	7	190	6	2	0	17	1	8	1	7	16	0	33	0	33	304	304				
1245	12	128	8	148	0	175	6	180	2	2	10	16	0	9	1	0	16	1	34	0	34	371	371				
1300	7	131	11	149	1	171	5	185	2	3	9	14	0	7	0	7	14	1	26	0	26	382	382				
1315	6	146	9	161	1	183	7	200	4	1	9	14	0	6	0	6	16	1	30	0	30	391	391				
1330	9	162	8	179	1	198	4	210	6	3	9	13	0	3	1	8	17	1	30	0	30	419	419				
1345	9	168	13	190	1	198	5	211	6	0	7	14	0	7	1	9	17	0	31	0	31	432	432				
1400	8	182	11	201	0	211	3	224	6	1	6	13	0	9	2	6	17	0	36	0	36	458	458				
1415	6	188	15	209	1	206	5	221	7	1	5	13	0	2	5	16	0	29	0	29	499	499					
1430	3	205	14	217	2	233	6	251	1	4	10	18	0	10	1	7	18	0	36	0	36	504	504				
1445	6	204	10	220	2	255	7	273	3	4	12	17	0	8	2	5	16	0	33	0	33	526	526				
1500	12	202	11	228	2	266	9	284	3	5	16	21	0	11	2	5	18	0	39	0	39	549	549				
1515	10	200	9	228	1	266	6	283	2	5	11	20	0	11	3	6	20	0	40	0	40	551	551				
1530	29	204	12	236	0	243	6	257	4	4	11	13	0	14	4	4	22	0	35	0	35	528	528				
1545	18	208	15	242	1	235	6	253	2	4	11	14	0	15	3	4	22	0	36	0	36	530	530				
1600	12	216	17	245	1	239	7	259	2	5	9	12	0	16	2	2	24	0	38	0	38	540	540				
1615	8	231	21	260	2	265	7	288	3	5	8	12	0	18	1	5	24	0	37	0	37	584	584				
1630	8	232	21	262	2	268	7	291	1	5	10	16	0	14	1	6	21	0	37	0	37	610	610				
1645	6	259	19	284	1	285	9	310	1	5	9	13	0	14	1	9	24	0	37	0	37	631	631				
1700	8	294	17	277	1	287	7	288	1	5	7	12	0	12	2	6	20	0	32	0	32	689	689				
TOTAL	95	1709	110	1905	9	1721	61	2347	12	4252	18	105	178	1	111	18	66	105	1	373	4	4525	4525				

Hourly Meter (Right approach) & Major	Per Street Approach Volume	Major Volume (all)
0700 WB	11	204
0715 WB	14	308
0730 WB	14	400
0745 WB	14	386
0800 EB	14	341
0815 EB	13	306
0830 EB	11	244
0845 WB	6	222
0900 WC	12	231
0915 WC	13	250
0930 WC	16	267
0945 WC	14	274
1000 WB	9	302
1015 WB	12	312
1030 WB	9	333
1045 WC	10	346
1100 WC	10	332
1115 WC	8	336
1130 EB	11	333
1145 EB	11	351
1200 EB	14	350
1215 WB	12	346
1230 WB	5	334
1245 WB	10	323
1300 WB	7	318
1315 WB	8	345
1330 WB	9	377
1345 WB	8	383
1400 WB	11	411
1415 WC	11	410
1430 WC	11	448
1445 WB	11	476
1500 WB	13	490
1515 WB	14	496
1530 WC	18	475
1545 WB	15	473
1600 WB	18	400
1615 WB	19	520
1630 WB	15	545
1645 WB	15	556
1700 WB	14	542



NOTE: THE VOLUMES ARE BASED UPON FOUR 15-MINUTE INCREMENTS.  
 Luglin 2008.xls, 15min/hr vol

CALTRANS  
 District 1  
 Traffic Operations

# **ATTACHMENT M**

**ADVANCE PLANNING STUDY**

## Memorandum

*Flex your power!  
Be energy efficient!*

To: BRIAN SIMON  
Advance Planning  
DISTRICT 01

Date: August, 20 2009

File: 01-Hum-255-0.0/1.7  
01-48940K  
Humboldt Bay Crossings

From:  JOE DOWNING  
Bridge Design Branch 3  
Office of Bridge Design North  
Structure Design  
Division of Engineering Services MS 9-4/8I

Subject: Advance Planning Study Transmittal

Attached are two copies of the Advance Planning Study for the above referenced project as Submitted to the Division of Engineering Services by your Request Memo dated May 1, 2009.

Please note that, no Advance planning Study was prepared for the Marina UC Bridge no. 04-0281, because there were no as built available. Our understanding is that it is a culvert.

### ALTERNATIVE 1:

This option is not feasible. The existing girder spacing is 8'-3" and the length of the overhang is 4'-4 1/2". The existing barrier concrete barrier type 9. The overhang width of the existing bridge is at maximum to handle the service loads. There is not adequate reinforcement on the deck and overhang to accommodate additional loads due to increase shoulder width and the new safety shape barrier on the bridge.

ALTERNATIVE 2:

The estimated construction costs, including 10% mobilization and 25% contingencies for all three bridges are as follows:

The following cost estimate is for all three bridges combined.

<u>Structure Name</u>	<u>Alternative</u>	<u>Estimated Cost</u>
Eureka Channel (04-0230)	2	-
Middle Channel (04-0229)	2	-
Samoa Channel (04-0228)	2	-
	<b>Total</b>	<b>\$27,095,00</b>

This Advance Planning Study and associated cost estimate is based on the following assumptions:

1. No Geotechnical data or soil report is available.
2. Assume normal construction windows.
3. Assume no Environmental constraints.
4. All Bridge foundations will be supported on class 70 ton and 36 inch CISS piles.
5. The existing retrofitted pile foundations will be able to handle the new widening loads.

If you have any questions or if you need additional information regarding this study, please Contact Ali Asnaashari at Calnet 8-498-8431 or Joe Downing at Calnet 8-498-8430.

Attachments

- c: ETaddese, Project Coordination Engineer MS 9-5/11G  
JStayton, Bridge Design Office Chief MS 9-2/2H  
SWiman, Technical Liaison Engineer MS 9- 1/5C(FM 2)  
EKaslan, Structure Maintenance & Investigations MS 9-1/9I  
DSpeer, Structure Construction MS 9-2/11H  
RBibbens, Geotechnical Services MS 5

#### Structure Design comments:

Adding a lower structure on one side of the bridge will have an adverse affect on the existing structure and therefore not recommended for consideration as an alternative. By observation the following can occur:

Out of phase behavior between the taller structure (existing) and the smaller structure (proposed bike path) can be expected during a seismic event. The taller structure will see larger lateral displacements which will likely cause an impact force on the smaller structure.

At least 50% of the original structure mass will be one side of the footing. Existing foundations were not designed for this additional loading.

The existing pile cap was designed to remain elastic while resisting the a single plastic hinging at the base of the column. Adding a second column will introduce another plastic hinge with an equivalent overstrength moment that the existing pile cap was designed for.

Bike path cannot be suspended nor supported on the existing columns as this will change the stiffness and behavior of the entire bridge under all group loadings.

#### Bridge Architecture & Aesthetics Comments:

We have reviewed the concept study for the secondary deck structure for Class 1 Bikeway at this location. We have the following observations and comments:

Locating the travel way of the bike path attached to the side of the substructure is highly unusual. There may not be anything intrinsically wrong with the positioning of the bikeway deck halfway up the column, but it is highly unusual, nonetheless.

The environment below the bridge superstructure is not a clean area. It is usually inhabited by insects, and various forms of animal and bird life. Asking the public to share this space with various types of creatures, may not be met with rousing applause.

Observation of the public for security reasons has always played a large part in our planning of pedestrian and bicycle facilities. A lot of bad activities could go on, undetected, below the superstructure. We believe that pedestrians, and bicyclists alike, would end up taking their chances on the roadway shoulder, rather than taking a risk of being trapped on this narrow bikeway below decks.

Perhaps two walk ways, located one each side of bridge deck level (one for bikes, and one for pedestrians), is a better solution.



"Sulouff, David"  
<David.H.Sulouff@uscg.mil>

To <brian\_simon@dot.ca.gov>

cc

Sent by:  
<David.H.Sulouff@uscg.mil>

bcc

Subject RE: 01-48940k HUM 255 PM 0.0/8.3 Feasibility Study,  
Question on vertical Clearances.

09/29/2011 01:52 PM

To complete the thought...

The Coast Guard would not object to increasing the width of the bridges (upstream & downstream), without a reduction to the existing navigational clearances, to accommodate the proposed addition of bike/ped/non-motorized access across the bay, on the existing alignment.

This alternative would still require a permit action by the Coast Guard and would be subject to NEPA, etc.

Thanks again,  
dhs

-----Original Message-----

From: Sulouff, David  
Sent: Thursday, September 29, 2011 1:42 PM  
To: 'brian\_simon@dot.ca.gov'  
Subject: RE: 01-48940k HUM 255 PM 0.0/8.3 Feasibility Study, Question on vertical Clearances.

And of course I must apologize immediately for using the incorrect spelling for the Wiyot Tribe. I will not repeat that in the forthcoming letter.  
Thanks,  
dhs

-----Original Message-----

From: Sulouff, David  
Sent: Thursday, September 29, 2011 1:37 PM  
To: 'brian\_simon@dot.ca.gov'  
Subject: RE: 01-48940k HUM 255 PM 0.0/8.3 Feasibility Study, Question on vertical Clearances.

Greetings Brian:

I have not provided the appropriate Coast Guard correspondence in reply to your earlier letter.  
Thank you for the reminder. I will follow through with an official reply shortly.

For the interim, I can tell you by email that the Coast Guard would most likely not support any reduction in the existing navigational clearances provided by the 3 Highway 255 bridges crossing Humboldt Bay. Fundamentally, under the provisions of the River & Harbor Act of 1899 and the General Bridge Act of 1946 (as amended), proposed bridges may not be obstructions to navigation.

During our previous discussion, we should have identified the following navigational needs that have priority or "right of way" over all other forms of transportation:

# **ATTACHMENT N**

**SCORE SHEETS**

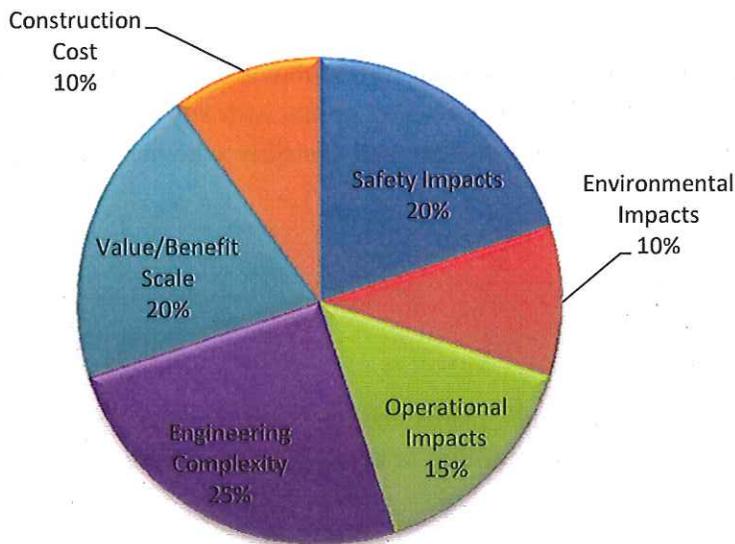
# Attachment N

## Improvement Scoring System Overview

Similar improvement features proposed in this study were evaluated using a scoring system which was developed to assist in analyzing comparable improvements. An example of a comparable improvements is the intersection treatments such as traffic signals, all-way stops and roundabouts. These are comparable because each of these treatments uses some form of traffic control device to accomplish the goal of establishing a right of way and providing vehicular and non-vehicular crossing opportunities. A second example of comparable improvements is the non-motorized improvement options within each segment such as the bridge widening features studied in Segment 1 or the bikeway alternatives in Segments 2, 3 and 4. These features are comparable as there are qualities and characteristics of each that can be assessed and used to evaluate one option against another.

The scoring system which has been developed for this study is based on several, multi-disciplined aspects that are typically used during a project's development to gauge an improvement's viability. With this system, these aspect categories are prioritized and assigned a weighted level of importance as shown in the graph below. Each of these categories is further divided into sub-categories which are intended to more specifically identify a feature's needs and impacts. For each sub-category, a scale is then used to assign a degree of involvement each feature has with these aspects of viability. Typical considerations related to the scoring of each of the sub-categories are included below.

### Scoring System Categories



#### Safety Impacts

- Vehicular Traffic Risk
- Non-Motorized Traffic Risk

#### Environmental Impacts

- Biological
- Archaeological
- Visual

#### Traffic Operations Impacts

- Flow
- Delay

#### Engineering

- Right of Way Requirements
- Utility Conflicts
- Design Standard Deviations
- Policy Deviations
- Difficulty of Construction

#### Value/Benefit

- Probability of Meeting Objective
- Regional System Fit
- Community Use Benefit

#### Construction Cost

## Safety Impacts

The scale for Safety Impacts range from a high-negative to a high-positive assessment with 3 intermediate levels in between. Scores range from 0 to 10 and increase in 2.5 point intervals. The more positive a feature impacts the subject's sub-category, the higher the score. Each category's score is averaged and then a weighting factor is applied to this average score. The maximum score for a category is equal to the weighted factor. For Safety Impact assessments, the higher the score, the less negative a feature impacts these design aspects. A sample clip of the safety impact's scoring matrix is shown below.

Weight	Category	Sub Category	0	2.5	5	7.5	10	Score	Average Score	Weighted Score
			Impacts							
			Negative		Neutral	Positive				
			High	Low	None	Low	High			
20	Safety	Vehicular Traffic Risk			X			5	7.5	15.0
		Non-Motorized Traffic Risk					X	10		
10	Environmental	Biological	X					0	1.7	1.7
		Archaeological		X				2.5		
		Visual		X				2.5		
15	Traffic Operations	Flow			X			5	5.0	7.5
		Delay			X			5		

### Vehicular Traffic Risk

Consider what level of impact the feature would have on vehicular traffic safety. Such things as the potential for the improvement to introduce obstacles, conflicts or sight distance problems. An improvement should be reviewed to determine any potential that the feature may increase the percentage or severity of any specific collision type as well.

### Non-Motorized Traffic Risk

Review of the impact level a feature would have on non-motorized traffic should include whether the feature would make the facility more or less safe by increasing conflict points with vehicular traffic or by reducing the existing level of safety. Also, review the facility and consider whether the feature would be an enhancement for non-motorized users.

## Environmental Impacts

See Safety Impacts for scoring scale detail.

### Biological

Biological impacts can include those which affect wetlands, plants and/or animal species. Review of existing conditions to assess the degree of impact and opportunities to avoid sensitive areas.

### Archaeological

As was the case with biological impacts, review of the existing conditions will allow for assessment of the degree of impact to known or potential archaeological resources. Also, coordination with Department's archaeological resources data base is included.

**Visual**

Being in the Coastal Commission’s purview, work along this route would be subject to that entity’s input. Expectation is that any feature having a significant impact to the visual landscape would be less supported and thus, less viable.

**Traffic Operations Impacts**

See Safety Impacts for scoring scale detail.

**Flow**

Some features may negatively affect traffic by reducing flow rate. Review the improvement and assess whether the proposal has this potential. Flow rate impact rates can be negative, neutral or positive.

**Delay**

A feature which introduces delay to through traffic would have a negative reaction by the public. Consideration for impacts to through users should be given. Traffic delay impacts can be negative, neutral or positive.

**Engineering**

For the Engineering Category, a three step scale was used to express the magnitude of involvement with the engineering related sub-categories such as right of way and constructability. The low end of the range is for features which would have a substantial magnitude of involvement. These features would receive a score of zero. Features with some level of involvement would receive a score of five and features with no level of involvement would receive ten points. Each category’s score is averaged and then a weighting factor is applied to this average score. The maximum score for a category is equal to the weighted factor. For engineering assessments, a higher score indicates less engineering involvement. A sample clip of the engineering aspect’s scoring matrix is shown below.

Weight	Category	Sub Category	Quantity				Score	Average Score	Weighted Score
			0	5	10				
			Substantial		Minor	None			
25	Engineering	Right of Way Requirements				X	10	5.0	12.5
		Utility Conflicts			X		5		
		Design Standard Deviations			X		5		
		Policy Deviations			X		5		
		Difficulty of Construction	X				0		

**Right of Way Required**

As a limiting factor for the study, most of the improvements in the study do not involve right of way acquisition. The Manila roundabouts and Feature 3.2, Class I, Off-Roadway Path are two features which were studied that are exceptions to this condition. Otherwise all features had no acquisition.

**Utility Conflicts**

Some features involve relocation of utilities. Most of these are located in Segment 3 & 4, where the location of the proposed path would require utility relocations.

### Design Standard Deviations

Adherence to the Department's Design Standards is preferred with all features. In some cases, upholding these standards is inherently impossible as the feature is contrary to the standard. Scoring the improvements on this sub-category is solely based on whether an exception would be required and whether an exception would be approved is not a consideration.

### Policy Deviations

Policy deviations are considerations that have impact on the viability of a feature. An example of one deviation would be the practice of installing a roundabout as a traffic calming device, which policy does not support. The intention of this scoring item is to capture any feature's design elements that are not captured in the Design Standards.

### Difficulty of Construction

The difficulty of construction sub-category is included as a means of capturing those features which require more significant engineering involvement. For instance, widening the Samoa Bridges would require significant resources. On the other hand, installing an all-way stop would require significantly less engineering than a roundabout.

## Value/Benefit

For the Value/Benefit Category, a three step scale was used to quantify the confidence level that a feature will accomplish a goal or that the feature will fit with other systems. As was the case with the Engineering Category, this category assigns either 0, 5 or 10 points to the steps. After calculating a category's score, the result is averaged and then a weighting factor is applied to this average score. The maximum score for a category is equal to the weighted factor. For value/benefit assessments, a higher score indicates a higher rate of return for the investment in the infrastructure. A sample clip of the value/benefit aspect's scoring matrix is shown below.

Weight	Category	Sub Category	Scale				Score	Average Score	Weighted Score
			0	5	10				
			Zero	Moderate	High				
20	Value/Benefit	Probability of Meeting Objective			X	10	6.7	13.3	
		Regional System Fit			X	10			
		Community Use Benefit	X			0			

### Probability of Meeting Objective

For gauging the probability of a feature meeting its objective, consideration should be given towards how effective previous installations have been. For instance, review of studies where roundabouts were installed for traffic calming may assist in assessing how successful a roundabout installation would be in reducing the traffic speeds.

### Regional System Fit

As a way of encouraging a regional system plan, points are awarded for improvements proposed with this study that connect with other agency's efforts outside of the state right of way. This is especially applicable to the non-motorized scoring where connecting to other systems would increase the value of an improvement.

### Community Use Benefit

Community use benefits considerations are mainly applicable to improvements proposed in Manila. This is true for comparison of non-motorized traffic improvement proposals. Review of pedestrian and bicyclist crossing locations and through paths would also factor in assessing an improvements benefit.

### Construction Cost

For the Construction Cost Category, a five step scale was used to incorporate an improvement's cost as a factor of viability. This is an important consideration given the current level of competitiveness for funding and other difficulties the current economy has caused with supporting transportation related projects. The scoring system used for this category is a five step scale that is based on the cost estimate of an improvement. These estimates were prepared for each of this study's proposed improvements (Attachment H). The scoring system rewards an improvement for having a lesser costs as the scale increases a score for an improvement's with a lesser cost. The scale following the clip below reflects these scoring system increments and point distribution. After calculating a category's score, the result is averaged and then a weighting factor is applied to this average score. The maximum score for a category is equal to the weighted factor. For construction cost assessments, a higher score indicates a less expensive improvement.

Weight	Category			Score	Average Score	Weighted Score
10	Construction Cost <sup>1</sup>	Enter Dollar Amount	\$27,000,000	0	0.0	0.0

1 OVER \$20M=0, \$5M TO \$20M=2.5, \$3M TO \$5M=5, \$1M TO \$3M=7.5, UNDER \$1M=10

## SUMMARY OF SCORES

### List of Possible Non Motorized Traffic Improvements

	FEATURE	SCORE	
SEGMENT 1	Feature 1.1, Class I, Deck Widening with New Foundations	50	
	Feature 1.2, Class III, Deck Widening with New Foundations	53	
	Feature 1.3, Class I, Deck Widening with Pier Cap Extensions	56	
	Feature 1.4, Class III, Deck Widening with Pier Cap Extensions	61	*
SEGMENT 2	Feature 2.1, Class I, Off-Roadway Path (PM 3.6/4.7)	75	*
	Feature 2.2, Class I, Off-Roadway Path (PM 2.9/3.6)	66	
	Feature 2.3, Class I, Contiguous to Roadway (PM 2.0/4.7)	59	
	Feature 2.4, Class III Bikeway (PM 1.7/5.4)	80	*
SEGMENT 3	Feature 3.1, Class III, Widened Shoulders	69	*
	Feature 3.2, Class I, Off-Roadway Path	-	
	Feature 3.3, Class I, Contiguous to Roadway	53	
SEGMENT 4	Feature 4.1, Class I, Off-Roadway Path (7.57/8.3)	71	*
	Feature 4.2, Class I, Off-Roadway by Lane Reduction	64	
	Feature 4.3, Class III, Shoulder Widening (PM 7.2/7.35)	73	*

### List of Possible Intersection Treatments

All Way Stop	42
Signal	39
Roundabout	36

\* INDICATES IMPROVEMENT WITH HIGHEST SCORE

# **ATTACHMENT O**

## **NON-MOTORIZED TRAFFIC IMPROVEMENTS FACT SHEETS**

# Attachment O

## Overview

Attachment O is a compilation of the fact sheets that describe the non-motorized traffic improvements which were studied for this report. Discussion on the issues and constraints with each are included within each fact sheet. Also included are details on the criteria used in determining the feasibility of a feature. Where applicable, scores for the features are provided for comparison of feature options within a segment. A summary table listing all of the non-motorized traffic improvement features studied is included below.

### Summary Table of Non-motorized Transportation Improvements Considered

(Most Feasible Improvements Highlighted)

	Improvement Evaluated	Summary Statement	Cost Range (millions)
SEGMENT 1	FEATURE 1.1 Class I, Deck Widening With New Foundations	Improvement on 1 side of structure. Conditional feasibility due to need for non-standard, shoulder width Design Exception approval.	\$30 - \$44
	FEATURE 1.2 Class II or III, Deck Widening With New Foundations	Widening on 1 side of structure achieves striped and signed bike lanes for both NB and SB.	\$28 - \$41
	FEATURE 1.3 Class I, Deck Widening with Pier Cap Extension	Similar to Feature 1.1 except the new deck will be supported by pier cap extensions.	\$21 - \$31
	FEATURE 1.4 Class II or III Deck Widening with Pier Cap Extension	Similar to Feature 1.2 except the new deck will be supported by pier cap extensions.	\$17 - \$25
	FEATURE 1.5 Class I Second Level Deck	USCG has indicated proposed improvement would not be permitted as structure would negatively impact navigable channel vertical clearances. Structure Design has indicated Bridge Architect would not approve concept.	Not Viable
	FEATURE 1.6 Class I, Cantilevered Deck (SAF-T-PATH Cantilever System)	Improvement on 1 side of structure. Structures Design has indicated these cantilevered attachments do not support the required live load.	Not Viable
	FEATURE 1.7 Class II or III Widened Shoulders with Cantilevered Deck	Proposed improvement would affect both sides of structures. Structure Design has indicated the existing deck is at maximum cantilever length for required live load.	Not Viable
SEGMENT 2	FEATURE 2.1 Class I, Off-Roadway Path (PM 3.6/4.7)	Off roadway path located along southbound roadside would require lead agency to maintain.	\$1.6 - \$2.5
	FEATURE 2.2 Class I, Off-Roadway Path (PM 2.9/3.6)	Off roadway path located along southbound roadside would require lead agency to maintain.	\$1.2 - \$1.8
	FEATURE 2.3 Class I, Contiguous to Roadway (PM 3.6/4.7)	Does not meet Clear Recovery Zone requirements. So, not likely to be viable.	\$7.0 - \$11.0
	FEATURE 2.4 Class II or III Bikeway (PM 1.7/5.4)	Minor roadway construction work anticipated at railroad crossings as the existing shoulders meet minimum shoulder widths.	\$160 - \$240 (in thousands)
SEGMENT 3	FEATURE 3.1 Class II or III, Widened Shoulders	Shoulders widened on both sides of roadway. Wetland impacts and utility relocation costs.	\$4.0 - \$6.0
	FEATURE 3.2 Class I, Off Roadway Path	Right of Way too narrow to accommodate improvement. Significant impacts to wetlands along roadside.	\$6.0 - \$10.0
	FEATURE 3.3 Class I, Contiguous to Roadway	Does not meet Clear Recovery Zone requirements. Right of Way too narrow to accommodate	\$6.0 - \$9.0
SEGMENT 4	FEATURE 4.1 Class I, Off Roadway Path	Along southbound roadside	\$2.3 - \$3.4
	FEATURE 4.2 Class I, Off Roadway by Lane Reduction	Less than 1 mile stretch of 4-lane highway with 2-lane connections at ends has no operational benefit.	\$1.8 - \$2.8
	FEATURE 4.3 Class II or III, Shoulder Widening (PM 7.2/7.35)	Shoulders widened on both sides of roadway. Wetland impacts and utility relocation costs.	\$600 - \$900 (in thousands)

### Feature 1.1, Class I, Deck Widening with New Foundations

**Proposed Locations:** Deck widening with new foundations on the existing bridges is proposed for the three structures which comprise the Samoa Bridges or more specifically, the Eureka Middle and Samoa Channel Bridges (see Attachment D1). The total length of these bridges is approximately 5,400'. The widening is proposed along the northbound traveled way as the transition between the

separated path and the Woodley Island on and off ramps would be less complicated than on the southbound traveled way. Further, transitioning between the separated path and the surface roads would also be less complicated at the Boat Launch if the path was located on the northbound side of the bridges.

**Feasibility Criteria:** Because the concept of this alternative is to construct additional deck width by adding new foundations, the feasibility of this alternative primarily hinges upon the structural analysis required to support the deck. The analysis of the structural requirements of this proposal was conducted by the Caltrans Structure Unit through an Advance Planning Study (APS), which is included as Attachment M. This analysis reviewed the existing bridges for the feasibility of increasing the loading on the bridges and also what modifications would be required to the existing foundations. Through this APS, it was determined that this alternative would require new foundations (piles, pile caps, columns, pier caps and girders).

An additional feasibility consideration is related to the shoulder widths of this feature. Based on the Highway Design Manual, the standard shoulder width for this facility is 8'. With this proposal, the shoulders would remain the existing 4'-9" wide, which would require a continuation of the Design Exception which was approved for the traveled lane narrowing (11'-3") and shoulder widening (4'-9") in 2008. As a condition of the approval to maintain these less than standard shoulder widths, Headquarters Design has indicated the Class I bikeway should have a connection to either a Class I or II bikeway and barring a continuation of the Class I bikeway, a means to crossing the rural high speed facility. In lieu of allowing the previously approved design exception, the structure would have to be widened an additional 8' to accommodate the width required to make the shoulders standard. This would significantly increase the costs.

**Installation Sequencing:** Sequencing considerations for this alternative include having a similar bikeway for this feature to connect with at the ends of the structures.

**Potential Safety Impacts:** With this alternative proposing to bring the bridge to standard by widening the shoulders and replacing the barrier and railings, the risk level would be lessened if all other things remain equal.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$30 and \$44 million.

**Pros:**

- The design provides separation between traffic modes, which would increase a non-motorized user's comfort level and safety when using the facility.
- Opening these bridges to pedestrian and bicycle traffic would be well received from the community as such an addition would address a long standing desire to provide an alternative to using the shoulders of US Route 101 to travel between Eureka and Arcata.
- Installation would address a major gap in the California Coastal Trail if this route was used.

**Cons:**

- The standard shoulder width can't be met using this design approach.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.
- The cost to widen the bridge is very high.
- Transitioning the non-motorized traffic onto the path or across the traveled ways presents a conflicts.

**Score:** 50 (See Score Sheet in Attachment N)

**Feature 1.2, Class II, Deck Widening with New Foundations**

Feature 1.2 is similar to the concept of Feature 1.1 and all discussion from Feature 1.1 above applies except for the following:

**Proposed Locations:** Same bridges as those described as Feature 1.1, except the both outside bridge railing would be replaced and no barrier separating vehicle traffic and non-motorized traffic would be constructed.

**Feasibility Criteria:** Same as Feature 1.1

**Installation Sequencing:** Same as Feature 1.1

**Potential Safety Impacts:** Installation of the wider shoulders could positively impact the level of safety as the additional room for cars to pull over in case of emergency is increased and bicyclists would have additional separation.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$28 and \$41 million.

**Pros:**

- The design provides greater separation between traffic modes, which would increase a non-motorized user's comfort level when using the facility.
- Opening these bridges to pedestrian and bicycle traffic would be well received from the community as such an addition would address a long standing desire to provide an alternative to using the shoulders of US Route 101 to travel between Eureka and Arcata.
- Installation would address a major gap in the California Coastal Trail if this route was used.

**Cons:**

- The cost to widen the bridge is very high.
- Environmental impacts (biological, visual and archaeological) are significant.
- Transitioning the non-motorized traffic onto the path or across the traveled ways presents a conflicts.

**Score:** 53 (See Score Sheet in Attachment N)

**Feature 1.3, Class I, Deck Widening with Pier Cap Extensions**

**Proposed Locations:** Deck widening with pier cap extensions on the existing bridges is proposed for the three structures which comprise the Samoa Bridges or more specifically, the Eureka, Middle and Samoa Channel Bridges. The bikeway is proposed along the northbound traveled way as the transition between the separated path and the Woodley Island on and off ramps would be less complicated than on the southbound traveled way. Further, transitioning between the separated path and the surface roads would also be less complicated at the Boat Launch if the path was located on the northbound side of the bridges.

**Feasibility Criteria:** Because the concept of this alternative is to construct additional deck width by extending the pier caps on both sides of the bridge, this alternative's feasibility primarily hinges upon whether the existing structures can support the additional loading that would result from widening the decks. As opposed to some of the other alternatives where a structural analysis was conducted by the Caltrans Structure Unit through an Advance Planning Study (APS), only a precursory review of this pier extension concept was completed. If this alternative is pursued in the future, an APS will be required.

An additional feasibility consideration is related to the shoulder widths of this feature. Based on the Highway Design Manual, the standard shoulder width for this facility is 8'. With this proposal, the shoulders would remain the existing 5' wide, which would require a continuation of the Design Exception which was approved for the traveled lane narrowing and shoulder widening in 2008. As a condition of this approval, Headquarters Design has indicated the Class I bikeway should have a connection to either a Class I or II bikeway and barring a continuation of the Class I bikeway, a

means to crossing the rural high speed facility. In lieu of allowing the previously approved design exception, the structure would have to be widened an additional 8' to accommodate the width required to make the shoulders standard. This would significantly increase the costs and may make this feature non-viable from a structure analysis perspective.

**Installation Sequencing:** Sequencing considerations for this alternative include having a similar bikeway for this feature to connect with at the ends of the structures.

**Potential Safety Impacts:** This feature proposes to maintain the existing shoulder widths, which are not standard for this type of facility. This reduces the area for vehicle operators needing to make an emergency stop or take evasive action. In between structures, the shoulders would remain 8-10' which is sufficient for emergencies and maintenance needs.

Widening the decks to provide a separated path would lessen the risk to pedestrians or bicyclists as these users would be protected by the barrier and railing.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$21 and \$31 million.

**Pros:**

- The design provides separation between traffic modes, which would increase a non-motorized user's safety when using the facility.
- Opening these bridges to pedestrian and bicycle traffic would be well received from the community as such an addition would address a long standing desire to provide an alternative to using the shoulders of US Route 101 to travel between Eureka and Arcata.
- Installation would address a major gap in the California Coastal Trail if this route was used.

**Cons:**

- The cost to widen the bridge is very high.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.
- Transitioning the non-motorized traffic onto the path or across the traveled ways presents a conflicts.

**Score:** 56 (See Score Sheet in Attachment N)

**Feature 1.4, Class II, Deck Widening with Pier Cap Extensions**

**Proposed Locations:** Similar to Feature 1.3, Feature 1.4 would extend over all three structures and widening would occur on each side of these bridges.

**Feasibility Criteria:** As was described under the Feasibility Criteria of Feature 1.3, an APS will be required.

Since bike and pedestrian travel on shoulders is restricted to one direction, this proposal would require a means for non-motorized users to cross the highway to access Woodley Island on and off ramps. While not impossible, the routing of these users is complicated by the short acceleration and deceleration lanes, weave lengths, high speed of vehicular traffic, and multitude of directions that non-motorized users need to monitor to safely navigate the roadway in this area.

**Installation Sequencing:** Similar need to Feature 1.3.

**Potential Safety Impacts:** Compared to Feature 1.3, non-motorized users of this feature do not have a separation benefit from barrier and railing. This may increase the risk to these users.

Motorist would benefit from this proposal providing additional shoulder area for emergency stops

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$17 and \$25 million.

**Pros:**

- The design provides greater separation between traffic modes, which would increase a non-motorized user's comfort level when using the facility.
- Opening these bridges to pedestrian and bicycle traffic would be well received from the community as such an addition would address a long standing desire to provide an alternative to using the shoulders of US Route 101 to travel between Eureka and Arcata.
- Widening without a barrier separation between motorized and non-motorized traffic would provide an area for vehicles to stop for emergencies.
- Installation would address a major gap in the California Coastal Trail if this route was used.

**Cons:**

- The cost to widen the bridge is very high.
- Transitioning the non-motorized traffic onto the path or across the traveled ways presents a conflicts.

**Score:** 61 (See Score Sheet in Attachment N)

**Feature 1.5, Class I, Second Level Deck**

**Description:** Feature 1.5 proposes providing a Class I bikeway by constructing a second deck on each of the three bridges. This new deck would be at a lower elevation than the existing decks and would primarily be supported at the piers with vertical connections to the overhead deck in between the piers. The width of the new deck would be wide enough to provide a Class I bikeway and would feature barriers with railing to prevent bicycle departures. The new deck would rise to meet the grades at the ends of the bridges. Exceptions to this are at the boat launch near Eureka and where the Samoa Bridge ends at the Vance Avenue overcrossing. At these locations, this feature would transition away from SR 255 and would connect to either Vance Avenue on the peninsula or Waterfront Drive in Eureka.

**Proposed Locations:** The second level deck is proposed for each of the three structures which comprise the Samoa Bridges (see Attachment D2). The total length of these bridges is approximately 5,400'. As is the case with all of the proposed Class I features of this segment, the new deck is proposed along the northbound traveled way.

**Feasibility Criteria:** The feasibility of the Second Level Deck concept hinges on several considerations. The primary consideration is related to the question as to whether construction of such a second deck is feasible from an engineering perspective. This question was addressed by the Caltrans Structures Unit through a precursory review of the concept. This Unit has stated construction of a second deck would have an adverse affect on the existing structure and therefore is not recommended for consideration as an alternative. The Unit also provided some observations which are included in Attachment M that details their precursory review.

The Department of Transportation's Bridge Architecture and Aesthetics Unit also reviewed the Second Level Deck proposal. This Unit expressed security, sanitary, and safety concerns with this proposal and do not support this concept. This unit's comments are also provided in Attachment M.

The HDM states that minimum vertical clearance for a Class I bikeway is 8' with 10' being desired. These dimensions establish the separation between the second level deck and the upper deck's pier cap (see Feature 1.5 section on Attachment D2). This separation requirement impacts the available vertical clearance between the second level deck's girders and the water surface below, which in turn reduces the vertical clearance in the navigable channels below. The U.S. Coast Guard (USCG) was

contacted to inquire into the minimum required vertical clearances under the Samoa Bridges as there are navigable channels beneath each of the structures. Data on vertical channel is tabulated below and indicates insufficient clearance. USGS response is included in Attachment M.

Channel	Existing Clearance	Proposed Clearance
Eureka Channel	40'	11'
Middle Channel	30'	1'
Samoa Channel	45'	16'

Further evaluation of this feature is not warranted as the concept is infeasible.

**Feature 1.6, Class I, Cantilevered Deck (SAF-T-PATH Cantilever System)**

**Description:** Description: Feature 1.6 proposes to provide a Class I bikeway by installing a retrofitted cantilever system. This system would be constructed of light-weight aluminum, provide an 8’ path and include barrier and railing as shown in the figure below. The system would be structurally designed to support bicycle/pedestrian loading conditions and can be attached to the existing parapet without any drilling of the existing concrete. The deck of the system would be constructed of an open grated wire mesh to minimize the weight of the cantilever system, reduce litter accumulation, provide drainage, and resist uplift pressure from wind. At the ends of the structures the cantilevered path would transition to a paved path along the roadside. The cantilevered deck would support two-way use.

**Proposed Locations:** Because of the crossing complications involved at the Woodley Island on and off ramps, this cantilevered deck is proposed along the northbound side of the facility. The cantilevered deck would be installed on each of the three Samoa Bridges, making the total length of the installation approximately 5,400’.

**Feasibility Criteria:** Because the concept of this alternative is to attach a secondary structure onto the primary structure, this alternative’s feasibility primarily hinges upon whether the concrete barriers on the existing structures can support the loading of both the cantilevered deck and any occupants.

The Department’s bridge engineers are required to design elements such as portions of bridge decks intended for pedestrian use for a live load condition equivalent to having a crowd gathered on the deck. This live load results in a pressure on the deck of 85 pounds per square foot. This pressure is greater than a truck lane load and is significantly more than what would intuitively be expected for a pedestrian structure. The result of having to design a pedestrian structure for such a load results in a structure that would have a strength, size and cost equal to or greater than that which is expected.

The Department’s Structures Unit reviewed the concept of the light-weight cantilever shown above and provided the following observation: *“adding the light weight cantilevers off the existing bridge is not feasible because it will add almost a 30% unbalance load to the existing piers and foundations and recent earthquake retrofit (EQR) would not be adequate to carry this additional load. Some sort of substructure will be needed.”* Consequently, this feature was determined to be infeasible and further analysis is not required.

**Feature 1.7, Class II, Widened Shoulders with Cantilevered Deck**

**Description:** Feature 1.7 proposes widening the shoulders by further cantilevering the existing deck without adding any structural members below the deck. Essentially, this concept proposes to rely on any residual strength in the existing structure to support the additional live and dead loads that

cantilevering would introduce. The proposal includes widening on both sides of the bridges and adding bicycle railing on each of the new barriers.

**Proposed Locations:** Widened shoulders with cantilevered decks would occur on all three of the existing bridges which comprise the Samoa Bridges or more specifically, the Eureka, Middle and Samoa Channel Bridges. The total length of these bridges is approximately 5,400’.

**Feasibility Criteria:** Because the concept of this alternative is to construct additional deck width by further cantilevering the deck, this alternative’s feasibility primarily hinges upon whether the existing structures can support the additional loading that would result from widening the decks. To make an assessment of how much the deck may be widened, a structural analysis was conducted by the Caltrans Structure Unit through an Advance Planning Study (APS), which is included in Attachment L. The assessment by that unit is summarized as *“The overhang of existing bridge is at maximum to handle the service load. There is not adequate reinforcement on the deck and overhang to accommodate additional loads due to increase shoulder width and the new safety shape barrier on the bridge”*.

In this analysis, the strength of the existing structures was assessed and through which, it was determined the existing structures are at the maximum cantilever length making this feature infeasible.

## Segment 2 (PM 1.7/5.4)

In this section of the report, discussion on the non-motorized traffic improvements within Segment 2 is centered on improvements that can benefit users on the route that are passing through the Manila community. An example of through-users would be those using the route as part of the proposed California Coastal Trail (Humboldt County California Coast Trail Implementation Strategy, 2010) which intersects the route at Jackson Road (PM 6.02) and then coincides with the route’s alignment until the route terminates in Eureka (PM 0.0). Non-motorized traffic improvements for users crossing the route in Manila are addressed in Section VII and Attachment P.

For non-motorized, through-segment users, this study examined the existing conditions or constraints and evaluated opportunities to improve the segment for these users. The ideal situation would be to provide for a detached Class I bikeway along the route. This however is difficult to accomplish as there are significant environmental and engineering constraints that make such a facility impractical. Because these constraints vary in complexity and severity along the entire 3.7 miles that the segment is comprised of, consideration was given for a facility that could provide a detached Class I bikeway that could serve the greatest benefit. Where the constraints are insurmountable, an attached Class I bikeway was evaluated for this segment and for continuity with adjacent segments, opportunities for a Class II or III bikeways were reviewed. These approaches to providing bikeway improvements to this segment are detailed below and the following table summarizes potential features for this segment.

	Improvement Description	Summary Statement
SEGMENT 2	FEATURE 2.1 Class I, Off-Roadway Path (PM 3.6/4.7)	Off roadway path located along southbound roadside. Maintenance agreement will be required.
	FEATURE 2.2 Class I, Off-Roadway Path (PM 2.9/3.6)	Off roadway path located along southbound roadside. Maintenance agreement will be required.
	FEATURE 2.3 Class I Bikeway, Contiguous to Roadway adjacent to southbound lane of SR 255 (PM 2.0/4.7)	Not supported by Design Review due to high speeds and placement of a barrier within Clear Recovery Zone.
	FEATURE 2.4 Class II or III Bikeway (PM 1.7/5.4)	Minor roadway construction work anticipated at railroad crossings as the existing shoulders meet minimum shoulder widths.

### **Feature 2.1, Class I, Off-Roadway Path (PM 3.6/4.7)**

**Proposed Locations:** This improvement would be constructed between post miles 3.6 and 4.7 as shown on Attachment E. The reasoning behind installing this feature between these limits is based

on this section having a wide right of way which provides the space to meander along the western roadside. Placement of the improvement here would provide the community of Manila with a means of connecting the west Lupin Avenue and west Peninsula Drive neighborhoods. This is considered a critical need as these neighborhoods are currently not connected by any means other than using beach access or the existing SR 255 shoulders. The improvement is proposed north of the Lupin Avenue intersection as it has the opportunity to connect to the Friends of the Dunes (FOD) path. Because the FOD path provides a break in the access control fence along SR 255 and an area on the FOD property is designated as a tsunami evacuation area, this path could serve as a tsunami evacuation route for residents. Extending the path further northward from Stamps Lane to Young Lane would provide the more northern community residents with a connection to the community center as well.

**Feasibility Criteria:** Besides this improvement's feasibility primarily hinging on those requirements detailed in Section 1000 (Bikeway Design) of the Highway Design Manual (HDM), this improvement will require a political agency to accept responsibility for the maintenance of the facility. In the past, the practice was to have an outside agency, such as the County of Humboldt, enter into a maintenance agreement with the State to assure the improvement will be kept in a safe and serviceable condition. In 2010, the Friends of the Dunes submitted an encroachment permit to construct a path within the state right of way between the southeast corner of their parcel (PM 4.20) and the intersection of Carlson Drive (PM 4.17), but this path has not been constructed to date. The improvement is shown on Attachment E.

A second feasibility constraint with this alternative is related to the impact such a project would have on the environment. These impacts include archaeological, biological and visual impacts. While there is flexibility in limiting these impacts by meandering the alignment to avoid or minimize these sensitive areas, the final design of the facility will be a balance between minimizing the impacts and the design meeting the standards of the HDM.

**Installation Sequencing:** Construction sequencing considerations for this alternative include coordination of other improvements, so the bikeway doesn't conflict with other roadside treatments. That is, care should be taken to avoid constructing this improvement in a location that precludes construction of another improvement or vice versa. An example of which would be not constructing the path where roadside landscaping could be installed.

**Potential Safety Impacts:** Installation of a detached bikeway is expected to improve pedestrian and bicyclist safety as such an improvement would provide separation between motorized and non-motorized traffic. With the design of the path's crossings of vehicular traveled ways, care should be exercised to minimize user's risk and clear designation of vehicular vs non-motorized right of way.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$1.6 and \$2.5 million.

**Pros:**

- The design provides separation between traffic modes, which would increase a non-motorized user's comfort level when using the facility and could increase the number of non-motorized users along the route.
- Construction of a detached path could provide the community with a designated tsunami evacuation route and would provide the community with an alternative to using the shoulder or beach access to connect neighborhoods.
- Would reduce the number of pedestrian-motor vehicle conflicts.

**Cons:**

- Because of the local roads accessing the highway from the west, bikeway crossings of these local roads can't be avoided.
- Constructing a Class I bikeway with standard features along the roadside could be difficult because of the topography and environmental impacts.

- A party to accept maintenance responsibility of a Class I bikeway is needed.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.

**Score:** 75 (See Score Sheet in Attachment N)

**Feature 2.2, Class I, Off-Roadway Path (PM 2.9/3.6)**

Feature 2.2 is similar to the concept of Feature 2.1 and all discussion from Feature 2.1 above applies except for the following:

**Proposed Locations:** This improvement would be constructed between post miles 2.9 and 3.6 as shown on Attachment E. The purpose of the installation would be to provide a non-motorized traffic connection between the central Manila area and the southernmost connection of Peninsula Drive. As was the case with Feature 2.1, the path would be constructed on the west side of the highway where the roadside area is wider than on the east side. The west side would also be the preferred location as the east side has roadside ditches which are subject to tidal action. No access openings would be provided with this feature and as a result, properties along the frontage of the highway would not be able to access the path directly from their parcels.

**Installation Sequencing:** An additional consideration to the sequencing described for Feature 2.1 includes constructing this feature so that it will connect to another system. That is, ideally this improvement would be constructed as part of a continuous network and would not be installed as a standalone path.

**Potential Safety Impacts:** No vehicular crossings will be encountered with this proposal.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$1.2 and \$1.8 million.

**Pros:**

- The path would provide southernmost Manila residents with an alternative route to connect with the center of the community.

**Cons:**

- Because Peninsula Drive provides the same terminal points of Feature 2.2, this proposal essentially provides a redundant route. That is, one can use either Peninsula or the proposed path to get to same point.
- Constructing a Class I bikeway with standard features along this section of roadside appears to have more significant topography and environmental impacts than Feature 2.1.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.

**Score:** 66 (See Score Sheet in Attachment N)

**Feature 2.3, Class I, Contiguous to Roadway (PM 2.0/4.73)**

**Proposed Locations:** The proposal of Feature 2.3 is to construct a contiguous path along the southbound side of the highway as shown in Attachment E. The path would extend from post mile 2.0 to 4.7 or from the three-way intersection at PM 2.0 to the intersection of Young Lane and SR 255. The proposal to construct the path on the southbound side rather than the northbound side is based on the desire to connect the path with the Friends of the Dunes path which is also on the southbound side. The southbound shoulder was also identified as a preferred location for the improvement as the roadside is wider along this side of the highway.

**Feasibility Criteria:** Section 1000 of the Highway Design Manual (HDM) provides the specific parameters for constructing a Class I path. In particular to this proposal, Section 1000 provides that the Mandatory Design Standard for separation between bike paths and highways shall have a physical barrier separation when the path is closer than 5' from the edge of shoulder. Because this proposal is to construct the path within this 5' zone, a barrier would be required. However, installation of a concrete barrier at the edge of the shoulder would be equivalent to placing a solid object in the Clear Recovery Zone (30' clearance) of this expressway. Vehicles departing the traveled way could potentially hit the barrier and a driver may over correct their errant vehicle into the path of oncoming traffic. Because of this issue, this proposal would be subject to approval.

At intersections with cross streets, the alignment of Feature 2.3 will need to diverge from edge of the shoulder because the barrier as shown above will obstruct a driver's corner sight distance when their vehicle is stopped at these intersections. Section 400 of the HDM provides specific details on the Mandatory Standards for sight distance and in particular requires that a line of sight to a 4.25 foot object from a setback for the driver on the crossroad shall be a minimum 10' plus the width of the major road but not less than 15' for a design speed of 55mph. The barrier railing shown in Attachment E reflects the divergence required to meet this Mandatory Standard.

**Installation Sequencing:** Similar to other improvements options in this segment, construction sequencing considerations for this alternative include coordination of other improvements, so the bikeway doesn't conflict with other roadside treatments.

**Potential Safety Impacts:** Placement of a barrier reduces the Clear Recovery Zone.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$7 and \$11 million.

**Pros:**

- This design proposal would provide separation between motorized and non-motorized users.
- Non-motorized users would benefit from this improvement.
- Could be designated as part of the California Coastal Trail.

**Cons:**

- Compared to Features 2.1 and 2.2, costs are relatively higher.
- Visual impacts would be a concern to the California Coastal Commission.
- Bikes would have limited access to the highway shoulder where they may need to transition for route continuity.
- Encroaches into Clear Recovery Zone.

**Score:** 59 (See Score Sheet in Attachment N)

**Feature 2.4, Class II or III Bikeway (PM 1.7/5.4)**

**Proposed Locations:** Installation of a Class II bikeway is proposed along both the north and southbound shoulders that comprise the entirety of Segment 2.

**Feasibility Criteria:** The installation of a Class II or III bikeway would be subject to the design standards of the HDM. This feature's proposal would also be subject to the improvement being needed as a means of delineating the right of way of motorists and bicyclists. While the latter is not a mandatory standard, Department policy and practice is to designate bike lanes on highways where there is a need to identify a motorist and bicyclist's lanes. Policy is also to install bikeways on parts of the highway system where the facility itself is a bikeway or the facility provides a connection to a discontinuity in another system. Therefore, the feasibility of this feature will primarily hinge on whether this bike lane would connect with another such as a continuation into Segment 1, 3 or southward towards Samoa.

**Installation Sequencing:** This feature should be installed after other improvements have been constructed. For instance, for this proposal to meet policy standards the feature would need to connect to another bikeway system or be continuous along this route. With Segment 3 having narrow shoulders, the logical sequencing of this feature would be to have this improvement follow the upgrades proposed along Segment 3.

**Potential Safety Impacts:** Adverse safety impacts due to this feature alone are not expected.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$0.16 and \$0.24 million.

**Pros:**

- With this feature being installed as a connection to other improvements, the feature will expand upon a network and would be positively received.
- Costs are low.

**Cons:**

- Shouldn't be constructed until after other improvements are installed.

**Score:** 80

(See Score Sheet in Attachment N)

**Segment 3 (PM 5.4/7.2)**

Within Segment 3, needs of non-motorized improvements were evaluated for users passing through the segment. Also considered, were users accessing the segment via the proposed California Coastal Trail (Humboldt County California Coast Trail Implementation Strategy, 2010) which intersects the route at Jackson Road (PM 6.02) and then coincides with the route's alignment until the route terminates in Eureka (PM 0.0).

For those non-motorized users along this segment, this study examined the existing conditions and evaluates opportunities to improve the segment. Ideally, the solution would be to provide a detached Class I bikeway along the route. This however is difficult to achieve as the right of way is narrow along this segment and there are wetlands along the roadside. Another alternative evaluated was the feasibility of providing a contiguous Class I bikeway, similar to that which was discussed for Segment 2. The third alternative evaluated was a feature which entailed widening the shoulders of the facility to standard width and designating the shoulder as a Class II or III bikeway. These three alternatives are summarized in the table below and are discussed in detail afterward.

	Improvement Description	Summary Statement
SEGMENT 3	FEATURE 3.1 Class II or III, Widened Shoulders	Shoulders widened on both sides of roadway. Wetland impacts and utility relocation costs.
	FEATURE 3.2 Class I, Off Roadway Path	Right of Way too narrow to accommodate improvement. Significant impacts to wetlands along roadside.
	FEATURE 3.3 Class I, Contiguous to Roadway	Does not meet Clear Recovery Zone requirements. Right of Way too narrow to accommodate

**Feature 3.1, Class II or III, Widened Shoulders**

**Proposed Locations:** Widening would occur on both sides of the highway throughout the entirety of the segment. See Attachment F.

**Feasibility Criteria:** The feasibility criteria of the bikeway aspect of Feature 2.1 are based on the design standards of the HDM, which were discussed in this section's overview discussion. Other design standards which factor into this feature's feasibility are found in the HDM. One such requirement specifies that shoulder widths must be a minimum of 8' wide for new construction of a 2-lane, conventional highway with a two-way, traffic volume greater than 400 ADT. This design standard establishes the width of the shoulders for this feature.

A second design standard in the HDM related to this feature is the standard which requires that a 20' clear recovery zone be provided on a conventional highway. This standard has a direct affect on this feature as installation of the wider shoulders would entail relocation of the overhead utility pole as shown on the map in Attachment F. Because these lines were originally installed without an access agreement or easement with the State and the current State policy is to relocate all utilities outside of the right of way whenever feasible, the utility companies would be responsible for bearing the costs related to the relocation, including easements, of these utilizes.

**Installation Sequencing:** The need to widen the shoulders within Segment 3 was identified in the Route Concept Report as a consideration with any rehabilitation work. Further, several comments have been made during and after the January 2010 public meeting by members of the community regarding bicyclists avoiding this segment because of the narrow shoulders. As a result, widening these shoulders or providing another means for bicyclists to safely pass through this segment has been given a high priority.

**Potential Safety Impacts:** Widening the shoulders would increase separation between motorized and non-motorized traffic, which would lessen the risk to pedestrians or bicyclists.

Relocation of the utility poles outside of the CRZ would have a positive safety effect as the risk of collisions involving the poles would be reduced.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$4 and \$6 million.

**Pros:**

- Widening would address a long standing deficiency with the facility.
- Local cyclists would strongly support the prospect of this feature.
- Level of safety increased for both cyclists and motorists needing to make emergency stops.

**Cons:**

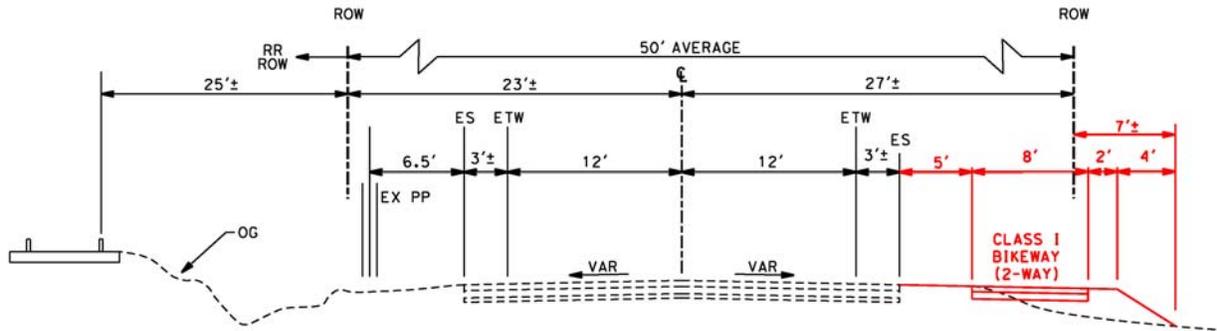
- The cost of widening the road is relatively high.
- Environmental impacts such as wetlands, visual, and possibly archaeological would not be avoidable.

**Score:** 69 (See Score Sheet in Attachment N)

**Feature 3.2, Class I, Off-Roadway Path**

**Description:** Feature 3.2 is a proposal to construct a Class I bikeway located beyond the paved roadway section. This off-roadway proposal is similar to Features 2.1 & 2.2 which were previously described. Contrary to the situation with Segment 2 that requires a meandering alignment, Feature 3.2 wouldn't require the same degree of a meandering alignment along the Segment 3 roadside as the topography does not have the same relief or sand dune features.

In the cross section below, the path is shown with a 5' separation between the edge of the paved shoulder and the path itself. Per the HDM, this distance is the minimum required separation without installation of a physical barrier. Also in the section below is the right of way width and it's relation to the existing roadway. As shown, the proposed feature and the existing roadway will not fit within the given right of way.

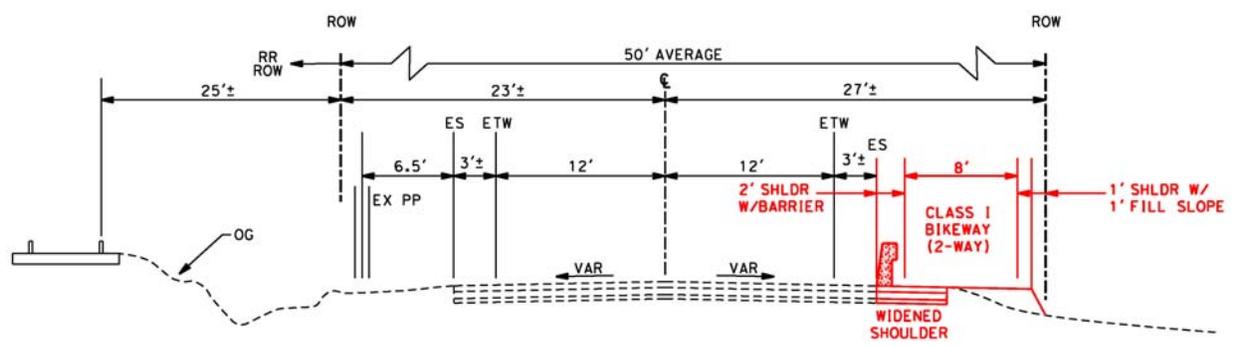


**Proposed Locations:** Feature 3.2 is proposed along the entirety of Segment 3 and because the railroad is located along the southbound side of the highway right of way, the northbound roadside is the preferred location for the facility. Placement of the bikeway on this side would simplify the issue of access rights as gaining these rights along railroad corridors has historically been more difficult than obtaining access from private parties.

**Feasibility Criteria:** The feasibility criteria of this feature is dependent on the design standards for Class I bikeways which were detailed in this previous section discussions. As was discussed, to meet design standards additional right of way will be required. Further, the area along the roadside is environmentally sensitive and some is categorized as prime agricultural land. Because of these two significant constraints, this feature was not considered further.

**Feature 3.3, Class I, Contiguous to Roadway**

**Description:** Feature 3.3 proposes to construct a Class I bikeway adjacent to the roadside. This path would be separated from the vehicular traffic by a concrete barrier. This barrier would prevent errant vehicles from encroaching onto the path and would be equipped with railing to prevent bicyclists from overtopping the barrier. The path would be designed to accommodate two-way traffic and would be constructed with an all-weather surface such as asphalt. One foot shoulders would be provided with the path design.



**Proposed Locations:** The proposal with this feature is to construct the improvement alongside the northbound edge of shoulder as this half of the right of way cross section has slightly more width than the southbound half section. This side of the roadway would also require fewer existing overhead utilities relocation. (See Attachment F)

**Feasibility Criteria:** This feature is subject to the design standards of the HDM as were discussed earlier in this section’s overview. Meeting these standards will not be possible though, as the narrow right of way prevents achieving some of the design standards such as full 2’ shoulder widths along the path, 8’ shoulders along the traveled way, and fill slopes at gentle gradients along the path.

Achieving corner sight distances will be difficult at intersections where the barrier will interfere with a driver’s line of sight. The work around to this problem would be to warp the path alignment as was detailed with Feature 2.3. This however is not feasible as the right of way does not provide the area to warp the path. Therefore, the solution would be to not install the barrier within the corner sight distances.

As was discussed with Feature 2.3, a concern with the narrow shoulders along the traveled way would require a design exception as the proposed 3' shoulders do not meet the minimum shoulder width for this type of facility (8'). Headquarters Design Reviewers have indicated that it's not likely that an approval for this shoulder width design exception could be expected as there are concerns with errant vehicles hitting the barrier and rebounding into oncoming traffic.

Other concerns with this proposal are related to non-motorized traffic using this path on the northbound side and then having to cross the highway to reach the Class I bike path of Segment 2.

**Installation Sequencing:** The most logical installation sequence for this alternative would be to install this feature after or in conjunction with a similar type of facility in Segments 2 and 4. In this way, a continuous system could be achieved.

**Potential Safety Impacts:** This feature proposes to maintain and/or lessen the existing shoulder widths, which are not standard for this type of facility. This leaves little room for vehicle operators needing to make an emergency stop or take evasive action.

As discussed above, placement of the barrier presents an increase in risk of head-on collisions.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$6 and \$9 million.

**Pros:**

- As opposed to having a Class II or III bike way, non-motorized users would feel more safe behind the concrete barrier than without one.
- Would reduce the number of pedestrian-motor vehicle conflicts.

**Cons:**

- The cost to install the feature is high.
- Impacts to view, access and shading/icing issues.
- Not likely to receive design exceptions.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.

**Score:** 53 (See Score Sheet in Attachment N)

### **Segment 4 (PM 7.2/8.3)**

Similar to Segment 3, improvements along the Segment 4 alignment are primarily focused on addressing the needs of non-motorized improvements users passing through the segment. Consideration was also given to non-motorized users crossing the highway at post mile 8.28, which is where the City of Arcata's Humboldt Bay Trail-Arcata Segment (Arcata Skate Park to Bracut Marsh) crosses the route. Coordination with the efforts of the City of Arcata's Gateway Project, which is under construction at this time, was also taken into account as that project involves non-motorized traffic improvements.

As was the case with all of this route's segments, this study examined the existing conditions and evaluates opportunities to improve or provide non-motorized facilities within each segment. Ideally, the solution would be to provide a detached Class I bikeway along the route. This however is difficult to achieve for various reasons along each segment. Along Segment 4, the three classes of bike improvements were evaluated in this study. The first of which is an off-roadway path, such as the Class I bikeways evaluated for Segments 2 and 3. The second type of improvement considered is also an off-roadway Class I bikeway with space created by eliminating one of the four lanes from the roadway section. Lastly, Segment 4 was evaluated for improvements that would provide for a Class II or III bike lane. These three alternatives are summarized in the table below and are discussed in detail afterward.

Improvement Description		Summary Statement
SEGMENT 4	FEATURE 4.1	Class I, Off Roadway Path
	FEATURE 4.2	Class I, Off Roadway by Lane Reduction
	FEATURE 4.3	Class II or III, Shoulder Widening (PM 7.2/7.4)

**Feature 4.1, Class I, Off-Roadway Path (7.57/8.3)**

**Description:** Feature 4.1 is a proposal to construct a Class I bikeway located outside of the paved roadway section along most of Segment 4. This off-roadway proposal is similar to those previously described as Features 2.1 & 2.2. As was the case in Segment 2, Feature 4.1 will require a meandering alignment where impacts to obstacles such as wetlands, water crossings, or other roadside features can be minimized or avoided.

In the cross section shown on Attachment G1, the path is shown with at least a 5’ separation between the edge of the paved shoulder and the path itself. Per the HDM, this distance is the minimum required separation without installation of a physical barrier, such as the one detailed as Feature 2.3. This section applies to the portion of the route between post mile 7.57 and 8.3 where the right of way varies between 128’ and 152’ wide.

**Proposed Locations:** Along the portion of the segment between post miles 7.57 and 8.3, the path is located on the northbound traveled way roadside as this roadside is wider here than on the southbound roadside. Having this extra width provides more area to meander the path around the existing utility poles and sensitive areas. Further, in the case where poles require relocation, the northbound poles would be less expensive to relocate as the poles along the northbound side have a single utility whereas the southbound poles services have a multiple utilities.

This feature should be terminated at PM 7.57 where users can cross the highway at the intersection rather than at midblock. Between post mile 7.2 and 7.57 non-motorized traffic will connect to the improvements described under Segment 3. Because connecting Feature 4.1 to a similar type of bikeway would be the preference and there are no known plans by other agencies to construct a similar feature near PM 7.57, Feature 4.1 has less support.

**Feasibility Criteria:** As was described earlier under similar feature discussions, this kind of improvement’s feasibility primarily hinges on those requirements detailed in Section 1000 of the Highway Design Manual (HDM).

The bridge which crosses McDaniel’s Slough would require widening to support this feature. This would require additional funding and would encompass additional environmental impacts.

Similar to other off-roadway paths, this improvement will require a second party to accept responsibility for the maintenance of the facility.

For this path to be feasible, the improvement would ideally connect to another similar type of non-motorized path network or continue on along this route. For example, a rail with trail or rail to trail connection would be a viable connection.

Feasibility of this feature is also dependent upon cooperation of the utility companies that would be responsible for funding the relocation of the existing overhead utilities and the pole supporting them.

**Installation Sequencing:** With regard to installation sequencing, the first step is the completion of the City of Arcata’s Gateway Project which is nearly complete. The second prerequisite step would be to install non-motorized traffic improvements in Segment 3, as this segment has significant needs for non-motorized traffic. The last step would be improving Segment 4 with this or another of the features. Of course, Segment 4 improvements may be addressed prior to Segment 3 if an outside of right of way opportunity develops prior to Segment 3. An example of which would be an advancement of a rails with trails or rails to trails system.

**Potential Safety Impacts:** Providing an off-roadway path would be a safety improvement to the segment for both motorized and non-motorized users. Non-motorized users benefit by gaining a separation from the high speed traffic. The safety of motorized users benefit from having some of the utility pole relocated outside of the clear recovery area.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$2.3 and \$3.4 million.

**Pros:**

- The design provides separation between traffic modes, which would increase a non-motorized user's comfort level when using the facility.
- Could provide an opportunity to connect out of right way facilities such as the California Coastal Trail with any of the City of Arcata bikeways.

**Cons:**

- Some crossings of local roads can't be avoided.
- Wouldn't be able to construct the path along the entirety of the segment.
- A political agency is needed to accept maintenance responsibility of a Class I bikeway.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.

**Score:** 71 (See Score Sheet in Attachment N)

**Feature 4.2, Class I, Off-Roadway by Lane Reduction**

**Proposed Locations:** The proposed lane reductions are between PM 7.57 and PM 8.16 (Attachment G). If two lanes are dropped, the lanes on the outside of both northbound and southbound traveled ways would be removed. In this case, one lane in each direction would be removed rather than removing two lanes exclusively as removal from only one direction would impact the turning lanes at the intersections and would require installation of new pavement over the existing median. Dropping of two lanes also creates an opportunity to provide a one-way, Class I path on each side of the highway, which would be narrower than a two-way path and would lessen the frequency and need to cross the highway.

Elimination of one lane as opposed to two is a consideration as well. This alternative, which is shown in the section in Attachment G1, would maintain southbound vehicular traffic's existing opportunity to overtake vehicles without entering opposing traffic's lanes. Elimination of the northbound, outside lane would entail less utility relocation than on the southbound side. The northbound side has a greater roadside width than the southbound side which increases the space to meander the alignment of this feature.

**Feasibility Criteria:** The feasibility of Feature 4.2 primarily hinges on whether lane elimination would be allowed on the highway. With the existing and under construction lane configurations described above, elimination of lanes along this segment would at first brush, seem to have a negligible effect on the system as a whole. Drivers that are accustomed to having a 4-lane configuration to pass slower vehicles may not support lane reductions.

This feature's feasibility is based on the requirements detailed in Section 1000 of the Highway Design Manual (HDM). One example of these requirements is the separation between the path and the edge of the road's pavement must meet clear recovery zone requirements. Other examples include the aspects of the path design such as width, grade, surface materials etc.

Similar to other off-roadway paths, this improvement will require a second party to accept responsibility for the maintenance of the facility.

For this path to be feasible, the improvement would ideally connect to another similar type of non-motorized path network or continue on along this route. Potential out of right of way systems that could become a point of connection for this feature include the potential for a rail with trail or rail to trail connection.

Feasibility of this feature is also dependent upon cooperation for the utility companies that would be responsible for funding the relocation of the existing overhead utilities and the pole supporting them.

**Installation Sequencing:** Sequencing considerations for this alternative include the completion of the City of Arcata's Gateway project and possibly needing to have other non-motorized improvements developed or planned in the area.

**Potential Safety Impacts:** Although a lane is proposed to be removed with this feature, the shoulder widths will remain the same and therefore no safety impact is anticipated.

Eliminating a lane would result in the loss of a passing opportunity. For drivers with desires to pass other vehicles, this would force them to overtake the lead vehicles by using the sections of the highway where passing is permitted in the lanes of opposing traffic's traveled ways. Relative to the existing conditions, this increases risk.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$1.8 and \$2.8 million.

**Pros:**

- The design provides separation between traffic modes, which would increase a non-motorized user's comfort level when using the facility.
- Could provide an opportunity to connect out of right way facilities such as the California Coastal Trail with any of the City of Arcata bikeways.

**Cons:**

- Some crossings of these local roads can't be avoided.
- Wouldn't be able to construct the path along the entirety of the segment.
- A party to accept maintenance responsibility of a Class I bikeway is needed.
- Separated paths can sometimes become areas where debris and litter collect without routine maintenance.

**Score:** 64 (See Score Sheet in Attachment N)

**Feature 4.3, Class II, Shoulder Widening (PM 7.2/7.4)**

**Description:** Feature 4.3 is a proposal to widen the shoulders along a short stretch of Segment 4

**Proposed Locations:** Feature 4.3 is proposed on both northbound and southbound shoulders for approximately the first 800' of Segment 4. After which, the highway section begins to widen to a 4-lane configuration. See Attachment G.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$0.6 and \$0.9 million.

**Score:** 73 (See Score Sheet in Attachment N)

# **ATTACHMENT P**

**INITIAL MANILA TRANSPORTATION  
ENHANCEMENTS FACT SHEETS**

## Overview

Attachment P is a compilation of the fact sheets that describe the initial Manila transportation enhancements which were studied for this report. Discussion on the issues and constraints with each are included within each fact sheet. Also included are details on the criteria used in determining the feasibility of an improvement. A summary table listing all of the initial transportation improvement features studied is included below.

## **Summary of Manila Transportation Enhancements** **Traffic Calming and Community Connectivity Improvement Options**

### **Initial Improvements**

Improvement	Location(s)	Summary Statement	Cost Range (in thousands)
Gateway Monuments	PM 3.6 & 4.1	Aesthetic signage informing drivers they have entered a community.	\$240 - \$350
Landscaping	PM 3.6/4.1	A roadside treatment that can help enhance a driver's sense of arrival by adding elements to the field of vision.	\$150 - \$230
Painted Medians & Islands	PM 3.6/3.9	Areas within roadway that can be used by pedestrians for refuge. Are also a feature added to convey a sense of arrival to drivers.	\$730 - \$1,100
Optical Speed Bar	PM 3.55/3.65 & 4.16/4.26	A field of converging, painted bars along a traveled way that effect drivers perception of speed.	\$70 - \$100
Radar Feedback Signs	PM 3.35 & 4.68	Electronic signs that measure and then relay speed of oncoming vehicles as a means to alerting drivers of their speed.	\$420 - \$630
Colorized Shoulders	PM 3.54/4.16	An aesthetic treatment to the shoulders that reinforces the separation between the traveled way and the shoulders. Also ads to a driver's sense of arrival.	\$510 - \$760
Safety Lighting	PM 3.6 & 3.94	A safety enhancement that increases the nighttime visibility of intersections and roadside areas.	\$440 - \$660
Pavement Marking (lane narrowing)	PM 3.6/4.1	Narrowing the traveled way provides additional shoulder area for bicyclists and pedestrians	\$130 - \$200

## **Initial Manila Transportation Enhancements**

### **Gateway Monuments, Segment 2 (PM 3.6 & 4.1)**

**Description:** Gateway features have recently completed a demonstration program and the Department's Gateway Monument Program has received permanent approval from the Federal Highway Administration (FHWA). As a result, gateway monuments are now being incorporated into highway landscapes across the state.

Gateway monuments are used to communicate a sense of arrival to drivers and as part of an improvement array can contribute to the overall effect of heightening a driver's awareness.

To be eligible for the Caltrans Gateway Monument Program, the proposed monuments must be located along the highway system and must be planned, designed, funded, constructed and maintained by a local entity willing to accept these responsibilities.

A suggestion was received via a comment card from the January, 2010, SR 255 Feasibility Study Public Meeting that these monuments be designed by local artists.

**Existing Conditions:** Currently, signage announcing arrival to the Manila Community entry points consists of conventional type Guide Signs.

**Proposed Locations:** The proposed location for a Gateway Monument is along the roadside of Segment 2 and near the entry points to the Manila Community District (see Attachment B). Factors to be considered when locating these elements into the roadside include corner site distance clearances, environmental impacts, location of power supply (if illuminated) and placement outside of the clear recovery zone. Ideally these features would be strategically located in proximity to other traffic calming features, so that the collective effect of the traffic calming improvements may be achieved.

**Feasibility Criteria:** Under current policy, the maintenance responsibility of a gateway monument must be accepted by a local political entity. This responsibility is formalized through a Maintenance Agreement between the Department and the local entity. Therefore, the feasibility of gateway monuments along this route largely relies on finding a responsible party for development, construction and maintenance.

Design of a gateway monument along this route will be subject to California Coastal Commission review and would require that agency's approval prior to gateway monument construction.

**Installation Sequencing:** Gateway monuments have been included as an initial installation item because these improvements will not need to meet traffic warrants and vehicular speed thresholds or need to have documented collision histories as justification for their construction. Essentially, these elements may be installed under the existing conditions. Further, these improvements would complement the other features proposed for the array of initial traffic calming improvements and would add to a driver's sense of arrival.

**Potential Safety Impacts:** Provided the monuments are installed outside of the clear recovery zone and do not impact corner sight distances, no safety impacts are anticipated.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$240,000 and \$350,000.

**Pros:**

- Installation of these features would be supported and viewed favorably by the public.
- Studies indicate that members of communities which had gateway monuments installed believe the monuments positively impacted the local economy and tourism.

**Cons:**

- Costs to maintain and operate these monuments would be borne by a local political entity such as Manila or HCAOG. The costs for gateway development would be outside of the community's usual expenses. The community may be dissuaded from participation by this non-essential expense.
- If installed, independent of other traffic calming features, it would not likely have a significant traffic calming impact.
- As the traffic along this route is mostly local, the effect of gateway monuments and similar type features will likely diminish as drivers become desensitized to the improvements.

**Landscaping, Segment 2 (PM 3.6 through 4.1), \$150,000 to \$230,000**

**Description:** Landscaping along Segment 2 of this highway is being considered as a traffic calming measure. The desired result of this installation is reduced vehicular speeds primarily between the Dean/Pacific and Lupin/Victor intersections. Therefore, the proposed landscaping installations are focused on this section. The concept of landscaping as a traffic calming tool is based on the practice of using such roadside treatments to provide a visual cue to the driver that conditions have changed

and that a corresponding change in the operation of the vehicle is required. In most cases, this type of roadside treatment is used in conjunction with other treatments to achieve the desired effect.

Along Segment 2, there are several public and private agencies/organizations that have varied interests and land uses in the area. Some of these groups are focused on the preservation of the area's scenery. Others are interested in opening the area up to recreational opportunities such as hiking, horseback riding and surfing. Common to all of these groups is an interest in preserving the nature of the corridor. Landscaping improvements are expected to be encouraged and supported by these groups.

**Existing Conditions:** Currently, most of the roadside along this segment consists of natural dune topography covered with native and non-native species. There are some areas where natural drainage courses have been blocked by the construction of the highway, railroad bed and/or residential development. At these locations wetlands have formed and due to tidal influences, most of these areas remain wet throughout the year. The existing vegetation primarily consists of native and invasive dune grasses, willows, and underbrush.

**Proposed Locations:** Landscaping improvements were evaluated for the roadside area of Segment 2 and are concentrated on the portion passing through the Manila Community District (see Attachment B).

**Feasibility Criteria:** Roadside landscaping treatments along this segment must meet certain criteria prior to being considered feasible. The criteria include highway safety, native species preservation, visual impact and maintenance issues. These criteria are further explained below.

All landscaping considered must meet the standards in the HDM for this facility. In general, any plants within the roadside area must either be outside of the clear recovery zone or be such a size that the plants do not act as rigid, fixed objects. The Highway Design Manual provides advisory standards for landscaping along highways and as this facility is designated as an expressway Section 902.2(2) advises that large trees, those with at least a 4" diameter after 10 years, be planted outside of a 40' clear recovery zone. Varieties of plants that do not constitute a large tree may be planted within the clear recovery zone, but are subject to other conditions such as maintenance access, irrigation needs, site distance clearances etc.

Visual impact to the highway by landscaping will require approval by the California Coastal Commission, which is delegated to Humboldt County. This is expected to be a feasible improvement, but will require that the materials used be native to the coastal/dune environment.

Responsibility for the maintenance of the landscaping must be accepted by a political agency such as Humboldt County or the Manila Community Service District. With the selection of native species and proper landscape design, maintenance requirements may be minimized and acceptance of maintenance responsibilities may be more favorable.

**Installation Sequencing:** Landscaping has been included as an initial improvement item as these features have less substantial constraints than other improvements. These improvements were also considered an initial option as landscaping features would complement the array of initially installed traffic calming improvements.

**Potential Safety Impacts:** Provided the plant materials are installed outside of the clear recovery zone and do not impact corner sight distances, no safety impacts are anticipated.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$150,000 and \$230,000.

**Pros:**

- Installation of these features would be supported and viewed favorably by the public as landscaping would add to the scenic value of the corridor.

- Landscaping installations may increase driver awareness and may alter driver behavior resulting in slower speeds.

**Cons:**

- Per the Highway Design Manual, maintenance costs and irrigation costs would be borne by local political entities. These costs would be outside of any construction funding source and some communities may be dissuaded by this non-essential expense.
- Subject to encroachment permit conditions.
- If not sufficiently maintained or is poorly designed, could obstruct sight distances.

**Painted Medians and Islands, Segment 2 (PM 3.64 through 3.94)**

**Description:** Medians are the portion of a divided highway separating the traveled ways for traffic in opposite directions.

Islands are areas between traffic lanes for control of vehicle movements or for pedestrian refuge. Islands are medians located within intersections or at an outer separation. Median/islands can also be considered a non-motorized traffic improvement because they create pedestrian refuge areas.

Medians and islands can be either at-grade areas delineated by pavement marking or they may be elevated from the roadway with raised curbs along their perimeter. Painted medians are proposed here because the Highway Design Manual (HDM) advises against the use of curbs on facilities with operating speeds greater than 45 mph. The surfaces of these features may be paved or landscaped (shrubs, trees, grass etc). Raised curbs are only permitted under certain conditions on freeways or expressways, but are largely permitted on conventional highways. For conventional highways the operating speed of the facility will determine the approved type of curb (height, vertical or sloped etc). The type of highway facility is also used in determining other design aspects of a median such as a median width and cross slope. In general, conventional highways have narrower medians than freeway/expressways.

**Existing Conditions:** Other than approach and bay tapers for left turn lanes, Segment 2 is absent of painted medians or islands.

**Proposed Locations:** Painted medians and islands are proposed along Segment 2 from post mile 3.64 to 3.94 (see Attachment B).

**Feasibility Criteria:** Installing painted medians and islands may be permitted as part of an array of other traffic calming improvements. Installing such marking would require shoulder widening to maintain the existing traveled way widths which would have environmental impacts.

A strong effort to coordinate the installation of painted medians/island with other features is needed to prevent conflicts with improvements installed at different times.

Section 3B.03 of the MUTCD allows for installation of double, double yellow painted lines to form flush median/islands which separate opposing traffic. Conditions for candidate locations are not detailed in the manual.

The HDM also requires divisional traffic islands to be no less than 4' wide and 20' long. These types of islands are also required to be offset 3' to the left of approaching traffic. This offset distance is in addition to the normal 2' left shoulder width.

**Installation Sequencing:** Painted median/islands are proposed as an initial improvement because this highway currently operates as a high speed facility and the installation of curbed median/islands is not feasible. In the future, the painted median/island may be replaced if the proposed short term

traffic calming measures successfully reduce the prevailing speeds. As such, curbed median/islands have been included as a long term improvement.

**Potential Safety Impacts:** Proper transitioning of the traveled lanes will reduce the probability of undesirable safety impacts.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$730,000 and \$1,100,000.

**Pros:**

- Discourages illegal passing (safety benefit).
- Installation of median/islands would be supported by pedestrians for their value as a refuge.
- Such a feature would provide drivers with a visual cue of the change in conditions. (safety benefit)
- As part of an array of improvements, has the potential to help alter a driver's behavior. (safety benefit)

**Cons:**

- If installed independent of other traffic calming features, it would not likely have a significant traffic calming impact.
- As the traffic along this route is mostly local, the effect of gateway monuments and similar type features will likely diminish as drivers become desensitized to the improvements.

**Optical Speed Bars, Segment 2 (PM 3.55 through 3.65 & 4.16 through 4.26)**

**Description:** Optical Speed Bars were recently adopted for use in the 2009 Edition of the Manual on Uniform Traffic Control Devices (MUTCD) but have not been included in the most recently adopted version (2010) of the California MUTCD (CAMUTCD). In the MUTCD, they are referred to as speed reduction bars, but they are also called transverse strips in other resources. These types of installations can have several different configurations, but all of them essentially involve installing pavement markings along a traveled way in a converging pattern. Some installations have the bars crossing the traveled way or alternatively they may be along the edges of the lane(s). The markings could be chevron shaped as well. When installed as a bar, the MUTCD recommends the markings be 18" long and 12" wide.

The theory behind optical speed bars is based on the concept that the converging pavement markings will affect a driver by giving the driver the perception that their vehicle is accelerating and they will alter their driving behavior as a result. This is accomplished by having the distance between each bar become shorter than the next and consequently, the corresponding time to pass each bar is lessened. The net effect of which, is a feeling that one is accelerating and a reduction of speed is required.

Studies have shown that initially, these markings do effectively reduce speeds along a segment, but over time this effect may diminish as drivers become familiar with the treatment. This would be especially true for routes where the majority of the traffic is local and frequently exposed to the feature as opposed to regional traffic that experiences the feature less frequently.

**Existing Conditions:** These features were installed as part of an overlay project in 2012. Other existing pavement marking in Manila consists of standard lane markings which identify the right edge of traveled way and no passing centerline markings (solid yellow lines) with tapers for left turning pockets.

**Proposed Locations:** Optical speed bars would be installed along the through lanes as they entered the Manila community from the north and south (see Attachment B). These markings would be located on the edges of the traveled ways as shown in the image above.

**Feasibility Criteria:** To date, these devices have not been installed along any District 1 facility but several projects are proposing their installation.

Guidance in the MUTCD suggests that speed reduction markings should be reserved for situations where an unexpected vertical or horizontal curve is ahead and it is desirable to have drivers reduce their speed in advance. These markings should be installed to supplement warning signs and other traffic control devices, not substitute for them. The MUTCD further states that these markings should not be used in locations with long tangent sections or in areas frequented mainly by local or familiar drivers. These prerequisite conditions are recommendations and are not mandates. Deviations from the recommendations are allowed if engineering judgment or study indicates the deviation to be appropriate.

**Installation Sequencing:** Optical speed bars have been included as an initial item because installation of these improvements will not need to meet traffic warrants and vehicular speed thresholds or need to have documented collision histories as justification for their construction. Essentially, these elements may be installed under the existing conditions. Further, these improvements would complement the other features proposed for the array of initially installed traffic calming improvements and would add to a driver's sense of arrival.

**Potential Safety Impacts:** No safety impacts are anticipated.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$70,000 and \$100,000.

**Pros:**

- The Manila locations would be a good test area for these features.
- The cost for the improvement installation is minimal.
- Was installed with new pavement overlay project in 2012.

**Cons:**

- As the traffic along this route is mostly local, the effect of optical speed bars and similar type features will likely diminish as drivers become desensitized to the improvements.
- Although this improvement is permitted in the federal MUTCD (2009), its use in California has not yet been adopted in the latest CAMUTCD (2010). These devices will be adopted for use in California after the CAMUTCD is updated with the new edition.

**Radar Feedback Signs, Segment 2 (PM 3.35 & 4.68)**

**Description:** Radar feedback signs are used to raise an approaching driver's awareness of their vehicle's speed. This is accomplished by flashing a driver's measured speed on a changeable message screen located under a sign with the posted speed limit. The vehicle speed is measured with a device using radar technology. These types of installations have been used effectively on many highways around the District and also within many locally operated roads. Studies have indicated radar feedback sign installations resulted in average speed reductions of 1-5 mph.

**Existing Conditions:** The posted speed limit through Manila is 55 mph. Signage marking the regulatory speed was located just beyond the Manila Community guide sign for southbound traffic at

PM 4.69 and for northbound traffic the sign is located at PM 2.30, which is a mile south of the Manila Community guide sign.

**Proposed Locations:** Radar feedback signs are proposed at points along the highway where motorists are approaching or have entered the community of Manila. The proposal is for one to be located along the northbound shoulder at PM 3.35 and another along the southbound shoulder at PM 4.68 (see Attachment B).

**Feasibility Criteria:** Installation of a radar feedback sign is discretionary. That is, there aren't any warrant requirements which need to be met and therefore, as compared to traffic signals or other traffic control devices, there is greater flexibility in recommending a location for installation. However, there is a concern that over use of these devices can lessen their effectiveness.

Other considerations with radar feedback signs include locating them in areas where corner sight distance will not be impacted, avoiding sensitive environmental areas, power source access, etc.

**Installation Sequencing:** Radar feedback signs have been included as an initial item of work because these types of improvements would have a low environmental impact, is a discretionary installation and would be more readily funded than other more costly types of improvements. This improvement would also fit in with the array of other short term traffic calming improvements.

**Potential Safety Impacts:** Direct safety impacts of a radar feedback installation are negligible. However, if the signs are effective in reducing the prevailing speed along the corridor, the severity and perhaps frequency of collisions may be reduced. With reduced vehicular speeds, a perceived improvement in overall safety may also be felt by members of the Manila community.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$420,000 and \$630,000.

**Pros:**

- Installation of these features would be supported and viewed favorably by the public. Radar feedback signs would add to the sense of arrival to drivers as they approach the community.
- Radar feedback signs have shown to have effective safety benefit in reduced vehicular speeds.
- These features were installed in 2012 as part of a Minor B project.

**Cons:**

- As the traffic along this route is mostly local, the effect of a radar feedback sign will likely diminish as drivers become desensitized to the improvements.
- Long project development and approval time period due to environmental surveys.

## **Colorized Shoulders, Segment 2 (PM 3.54 through 4.16), \$510,000 to \$760,000**

**Description:** The colorizing of a shoulder along a roadway can have many purposes. The treatment may be done for aesthetics, bike lane marking, parking area demarcation or traffic calming. For this application, colorized shoulders are being considered for their traffic calming effect which would rely on this treatment being incorporated into an array of other improvements.

Current products on the market provide for colorization of both concrete and asphalt pavements. Some of these products are used to treat pavements which have already been placed. These types of treatments are typically pigments, paints or epoxy coatings. Other products available on the market allow for placement of a pre-colored pavement material. These types of treatments are usually mixed in at the pavement batch plant and are typically a pigment type additive.

The durability of the various types of treatments depends on many factors. For instance, a high volume of traffic will wear the material more rapidly. Exposure to some elements (sunlight, acids, sands, oils, snow removal equipment, etc) can erode, oxidize or fade the colorization of these treatments. Regular preventive maintenance can extend the useful life of these treatments. Examples of preventative maintenance include street sweeping to remove abrasive materials, and touch-up retreatment to prevent expansion of scuffed areas.

**Existing Conditions:** The existing shoulder areas are comprised of asphalt material and are in relatively good shape. Some surface cracks were observed in a recent field visit.

**Proposed Locations:** Colorized shoulders are proposed along the Manila portion of the highway. For northbound traffic the treatment would be between post miles 3.54 and 3.94 and for southbound traffic between post miles 3.64 and 4.04 (see Attachment B).

**Feasibility Criteria:** The primary constraint with the feasibility of colorizing a shoulder is related to maintenance costs and a shortage of experience with the material in District 1. This is especially true for the SR 255 location where the material will be frequently exposed to foggy and/or rainy conditions.

The least complicated and difficult method of installing a colorized shoulder is a slurry type application. The drawback to this type of application is that the material may fill voids in an open graded asphalt concrete (OGAC) surface. This could diminish or interfere with surface runoff conveyance. Presently, the surface is not OGAC, but if the surface is rehabilitated with OGAC, slurry applied colorized shoulders may not be an option.

Colorized shoulders will be subject to approval from the California Coastal Commission. The color of the treatment may play a role in the Commission's approval. However with the Safety Corridor along US 101 currently proposing to install colored shoulders (redwood shade), the Commission will weigh in on the color choice in advance of a SR 255 application and the Safety Corridor will set the color precedent.

**Installation Sequencing:** Colorized shoulders have been included as an initial item because installation of these improvements will not need to meet traffic warrants and vehicular speed thresholds or need to have documented collision histories as justification for their construction. Essentially, these elements may be installed under the existing conditions. These pavement marking improvements should coincide with work done to add painted medians/islands as the colorized shoulder treatment could be used to mask the old 4" white right edge line (Standard Detail 27B). Further reason for inclusion of these items on the short term list is related to their value in the array of short term improvements that would help add to a driver's sense of arrival.

**Potential Safety Impacts:** The addition of the colorized shoulder would provide a more defined shoulder area for non-motorized motorists and if the array of short term improvements is successful in reducing traffic speeds, the perceived safety of this segment will be positively impacted.

**Estimated Construction Costs:** The costs associated with the installation of colorized shoulders will depend on the type of product used to add color to the pavement. For the Manila application, the slurry type of colorization products was used to estimate cost of construction because the existing pavement is scheduled to be overlaid in 2013 and is expected to be in good condition when this feature moves forward. The cost for colorizing hot mix asphalt is significantly more than a colorized seal coat. Based on the cost of materials, a colorized seal coat is about 10% of the cost for a colorized hot mix asphalt (HMA) treatment. The advantage to a seal coat over a dyed hot mix application is that the HMA requires significantly more preparation than a seal coat as HMA involves saw cutting and cold planning the shoulders, then placing new hot mix asphalt. The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$510,000 and \$760,000.

**Pros:**

- Installation of these features would be supported and viewed favorably by the public.
- Such a feature would provide drivers with a visual cue of the change in conditions and would enhance awareness of the shoulder area.
- One manufacturer has indicated an interest in partnering with the District on a pilot pavement colorization program.
- Installation should increase the shoulder's visibility to a driver.

**Cons:**

- Costs to maintain the colorized pavement would come from Caltrans or local agencies' maintenance budgets.
- If installed independent of other traffic calming features, it would not likely have a significant traffic calming impact.
- As the traffic along this route is mostly local, the effect of gateway monuments and similar type features will likely diminish as drivers become desensitized to the improvements.

**Safety Lighting, Segment 2 (PM 3.64 and 3.94)**

**Description:** Safety lights are electrical devices installed at intersections or other locations where illumination of roadway features may be desired. The purpose of illuminating these areas may include a desire to reduce nighttime collisions, reduce criminal activities, or to provide greater visibility. These luminaires may be surface mounted on vertical surfaces (wall luminaires), flush mounted into structures (soffit luminaires) or be attached to arms extending from utility poles or masts (roadway luminaires). The lamps are usually high pressure sodium types for state highway applications.

Justification of the installation of a safety light is specified in Chapter 9 of the Traffic Manual where warrant criteria are detailed for different types of highways (freeways, conventional and expressway). Also addressed in the Manual are design standards and cost sharing proportions for safety lighting installations.

**Existing Conditions:** Currently, the only safety lighting installed along SR 255 in Manila is at the intersection of the highway with Lupin Avenue. As-built plans show a pair of Type 30, 310 watt high pressure sodium luminaries mounted on standard masts.

**Proposed Location(s):** There are two locations along Segment 2 where safety lighting installations and/or updating is considered. The first location is at the intersection of the SR 255 with

Dean/Pacific (PM 3.64) and the second is at the intersection of Lupin Avenue (PM 3.94) (see Attachment C).

**Feasibility Criteria:** Chapter 9 of the Traffic Manual details the conditions that must be present to allow a safety light installation at an existing intersection and at the State's expense. The first of these four warrants is based on traffic and/or pedestrian volumes. The second warrant is based on nighttime collisions and the third warrant requires a traffic signal or flashing beacon to be installed. The fourth warrant allows for lighting to be installed when geometric conditions such as sight distance, channelization etc will be improved with a safety light installation.

Because the Lupin Avenue intersection already has a light installed, there is a possibility that the existing luminaire could be updated, or upgraded. The determination of whether updating or upgrading is feasible is based on whether the existing improvements meet today's standards (Traffic Manual, Standard Plans etc). As-built plans and fields reviews would best accomplish this analysis.

A third alternative is available to install or upgrade a safety light. This third option is discussed in Chapter 9-09.6 of the Traffic Manual which provides for unwarranted safety lighting installations when a local agency proposes to develop, construct, maintain, and operate the lighting through an encroachment permit process.

Even with break-away bases, safety lights are fixed objects which can become obstacles. For this reason Caltrans practice is to only install these features where a clear, safety benefit justifies their installation.

**Installation Sequencing:** Although State funded safety lighting improvements are infeasible based on Traffic Manual warrants, there is a possibility that they may be installed or updated with an encroachment permit application sponsored by a local agency. However, because no local agency has initiated such a process, safety lighting has been determined to be a long term improvement item.

**Potential Safety Impacts:** Installing safety lighting at the Dean/Pacific intersection could increase a driver's awareness of the intersection and any conditions which would require driver adjustments. In particular, the northbound traffic would have a greater visual indicator of the approaching intersection with a safety light installation.

Except for the existing safety lighting at the Lupin Avenue intersection being located closer to the roadway than the standard distance, the existing luminaires meet Caltrans standards. The locations of the existing luminaires also provide adequate distribution of light across the highway. Thus, there is little opportunity to improve the illumination of this intersection.

Potential for encountering aerial deposited lead exists with the construction of any improvement that involves excavation along the roadside. Costs for developing a lead compliance mitigation plan are included in the cost estimate.

**Estimated Construction Cost:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$440,000 to \$660,000.

**Pros:**

- The community of Manila would view installation of these features favorably.
- The addition of these features would enhance awareness of motorists traveling through the community by improving the visibility of the intersections.

**Cons:**

- These two locations do not currently meet warrant criteria for safety lighting, Area lighting could be considered but costs to develop, install, maintain, and operate these lights would need to be borne by a local agency.

- As the traffic along this route is mostly local, the effect of such features will likely diminish as drivers become desensitized to the improvements.

### **Pavement Marking (lane narrowing), Segment 2 (PM 3.6 through 4.1), \$130,000 to \$200,000**

**Description:** Pavement markings are used to delineate the extent of the traveled way and to separate traffic flows (bicycles, cars, pedestrians, opposing traffic, etc). Markings are also used to channelize traffic for through and turning movements.

In the interest of calming traffic passing through Manila, this improvement concept proposes to reduce the through lane widths. This proposal is based on the studies that have indicated the width of a roadway or a driver's field of vision has an effect on a driver's operation of a vehicle. Generally stated, the theory is that the wider the cross section available to a driver, the more comfortable a driver is with operating their vehicle through a section of roadway. This comfort level contributes to increased operating speeds. Another theory, which has had mixed supporting evidence in studies, is that narrowing the lanes results in decreased operating speeds.

**Existing Conditions:** Through Manila, the 12' lanes are marked with a double yellow centerline (Standard Detail 22) and along the right side of the traveled way, a 4 inch white edge line (Standard 27B & 27C). The existing marking configuration also provides for turning lanes with tapers to allow for storage and deceleration.

**Proposed Locations:** Lane narrowing to 11' is proposed along the portion of highway passing through Manila and between post miles 3.54 and 3.94 for northbound traffic and between 3.64 and 4.04 for southbound traffic (see Attachment C). This pavement marking modification could be done along with colorized shoulders as the colorized shoulder treatment could be used to mask the remnants of the old 4" white right edge line (Standard Detail 27B).

**Feasibility Criteria:** Under current policy, 12' is the minimum width required for a travel lane on a high speed facility such as SR 255, where the prevailing speed is 58 mph. In some situations Design Exceptions have been approved to allow the installation of an 11' through lane. An example of this is over the Samoa Bridges, where the through lane widths were reduced to 11' and the shoulder areas increased to 5' for bicyclists along the structures. A Design Exception will also be required for this proposal. The premise for this exception will be based on a need to calm traffic as well as providing additional area for non-motorized traffic.

**Installation Sequencing:** Lane width reduction to 11' through new pavement marking installation has been included as an initial item because this type of improvement would have a low environmental impact and would be more readily funded than other more costly types of improvements. This change in the roadway cross section would also fit in with the array of other short term traffic calming improvements.

**Potential Safety Impacts:** A reduction in lane width decreases the separation between opposing vehicles. This lessens the amount of space available for emergency maneuvers and conventional operation of vehicles. As a result, there is a slight decrease in the level of safety an 11' lane would have over a 12' lane. For instance, the Crash Modification Factors Clearinghouse attributes an 11' to 10' lane reduction with a -9% crash reduction factor. This means that the change in width potentially increases the crashes by 9%. Similar results would be expected with a lane width reduction from 12' to 11'.

**Estimated Construction Costs:** The costs to install new markings would include removal of the existing striping. These costs could be reduced if the lane reduction marking correlated with the installation of a colorized shoulder. The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$130,000 and \$200,000.

**Pros:**

- Easy to install.
- Installation of these features would be supported and viewed favorably by the public. Such a feature would enhance the sense of arrival to drivers as they approach the community.

**Cons:**

- If installed independent of other traffic calming features, would not likely have a significant traffic calming impact.
- If overlay is required to cover/remove old striping, could become an expensive project.
- As the traffic along this route is mostly local, the effect of a reduced through lane width will likely diminish as drivers become desensitized to the improvements.

# **ATTACHMENT Q**

**FUTURE MANILA TRANSPORTATION  
ENHANCEMENTS FACT SHEETS**

## **Overview**

Attachment Q is a compilation of the fact sheets that describe the future Manila Transportation Enhancements which were studied for this report. Discussion on the issues and constraints with each are included within each of these fact sheets. Also included are details on the criteria used in determining the feasibility of a feature. Where applicable, scores for the enhancements are provided for comparison of feature options within a segment.

## **Future Manila Transportation Enhancements**

### **Curbed Medians and Islands, Segment 2 (PM 3.64 through 3.94)**

**Description:** See previous discussion on painted medians and islands for description.

**Existing Conditions:** Other than approach and bay tapers for left turn lanes, there aren't any medians or islands along Segment 2.

**Proposed Locations:** Curbed medians and islands are proposed along Segment 2 from post mile 3.64 to 3.94 (see Attachment C).

**Feasibility Criteria:** The primary constraint with installing curbed medians and islands along Segment 2 is related to the high speeds of vehicles along the segment where the prevailing speed is 58 mph. The Advisory Standard in the Highway Design Manual (HDM) is to avoid the use of curbs on facilities with operating speeds greater than 45 mph.

The classification of this segment of the highway as an expressway also introduces restrictive conditions for a proposal to install curbs. Specifically, the Advisory Standard in the HDM doesn't list any curbs types as being appropriate for a freeway/expressway application and most of the exceptions allowed in some circumstances will not apply to the Manila segment. One exception that may apply is the use for curbs on freeway for traffic calming purposes. However, this traffic calming application exception can only be cited when the speeds are less than 40 mph.

The Permissive Standard in the HDM states divisional traffic islands should be no less than 4' wide and 20' long. These types of islands should also be offset 3' to the left of approaching traffic. This offset distance is in addition to the normal 2' left shoulder width. These distances total 8' of additional roadway width for including an island.

**Installation Sequencing:** Because this highway is currently a high speed facility, the installation of curbs is not feasible and therefore, curbed medians were not viable as an initial improvement. However, if the proposed short term traffic calming measures successfully reduce the prevailing speeds, median/islands may become viable. As such, curbed median/islands have been included as a future improvement.

**Potential Safety Impacts:** Safety impacts of a median/island installation would be related to vehicle speeds and the potential of an errant vehicle impacting a raised curb. The use of a sloped curb could lessen the impact severity of an errant vehicles coming into contact with a curbed median/island.

Frequently vehicles leave the traveled lane to maneuver around other vehicles slowing down to make turns off of the highway. Raised curb medians would eliminate this occurrence.

**Estimated Construction Costs:** Costs for this feature were estimated based on the condition that shoulder widening occurred under the scope of work for painted median/islands previously installed as an initial improvement. Costs also accounted for dimensions of a curbed island equal to those of a painted median/island (2' median plus 4' for left shoulder separation). The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$340,000 and \$510,000.

**Pros:**

- Installation of median/islands would be supported by pedestrians for their value as a refuge.
- Would provide separation between opposing traffic and would channelize vehicles, which is helpful to bicyclists and pedestrians.
- Such a feature would provide drivers with a visual cue of the change in conditions.

**Cons:**

- Unless ADA features are included in the design, raised curbs could make crossing highway difficult for disabled users.
- If installed independent of other traffic calming features, it would not likely have a significant traffic calming impact.
- As the traffic along this route is mostly local, the effect of some types of features will likely diminish as drivers become desensitized to the improvements.
- Without special provisions, the raised curbs will make bicycle and wheelchair crossings of the highway difficult.

**Traffic Signals (Manila), Segment 2 (PM 3.64 and/or 3.94)**

**Description:** Traffic signals are control devices which are installed for a variety of reasons and for the benefit of many forms of traffic. These devices can be installed to aid pedestrians, bicyclists, streetcars, and ridden animals as well as motor vehicles of all types. When properly used, traffic control signals are valuable devices for the control of traffic and can reduce the frequency and severity of certain types of collisions.

Signals can be installed at intersections as well as locations where it is desirable to stop the flow of traffic to allow cross movement of other traffic. In this way, signals assign the right-of-way to the various traffic movements.

Improper or unjustified traffic control signals can result in excessive delay, excessive disobedience of the signal, increase traffic on alternate routes as motorists attempt to avoid a signal, and increase the frequency of collisions.

**Existing Conditions:** For the Manila intersections, the existing traffic control includes stop signs for traffic approaching from the minor streets, while vehicles traveling along SR 255 flow freely through this segment. At the intersection of Lupin Avenue, turning lanes are provided for north and southbound traffic along SR 255. Although there aren't any right turn lanes at these two intersections, drivers frequently use the wide shoulders throughout this section to decelerate and complete right turn movements off of the highway.

Traffic volumes and collision history at these intersections were addressed in Section IV of this report.

**Proposed Location:** With this study, traffic signals are proposed at two intersections in Segment 2. These locations are at the intersections of Lupin Avenue/SR 255 (PM 3.94) and Pacific/Dean/SR 255

(PM 3.64). A third location is proposed as part of the traffic mitigation for redevelopment of Samoa at the T-intersection of SR 255 and New Navy Base Road (PM 2.0) which is outside of Manila. Specifics on this third location is included in a separate subsection.

**Feasibility Criteria:** The engineering analysis of traffic signals is guided by Part 4 of the California Manual on Traffic Control Devices (CAMUTCD). The most recent version (2006) is based on the FHWA's 2003 Edition of the MUTCD. Within this manual all aspects of proposing, developing, approving, funding, and constructing a traffic signal installation are discussed. Key to determining the feasibility of a signal at any given location is the portion of the manual that addresses traffic signal warrants.

An engineering study of traffic conditions, pedestrian characteristics and physical characteristics of a location must be performed to determine whether a traffic control signal is justified. Information in these engineering studies include data that analyze whether the location meets one or more of the eight traffic control signal warrants, which are listed below.

Warrant 1, Eight-Hour Vehicular Volume.

Warrant 2, Four-Hour Vehicular Volume.

Warrant 3, Peak Hour.

Warrant 4, Pedestrian Volume.

Warrant 5, School Crossing.

Warrant 6, Coordinated Signal System.

Warrant 7, Crash Experience.

Warrant 8, Roadway Network.

Warrant 9, Intersection Near a Grade Crossing.

Specific details on the methods of conducting an engineering study for the purpose of a traffic signal warrant analysis is contained within the CAMUTCD.

**Installation Sequencing:** Traffic signal installation(s) in Manila have been determined to be a future improvement option as the analyzed intersections do not currently meet any of the traffic signal warrants.

**Potential Safety Impacts:** As was described earlier, a traffic signal can reduce the frequency and severity of some types of collisions. However, they can also lead to more frequent rear end type collisions.

**Potential Level of Service Impacts:** Compared to the existing conditions, constructing a traffic signal at either of the two Manila intersections would decrease the level of service for SR 255 as the motorists would experience delay while passing through the community. For traffic entering SR 255 from local roads the amount of delay they experience would be lessened with the installation of a traffic signal and thus the LOS for these motorists would slightly increase.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$2,380,000 and \$3,570,000.

**Pros:**

- The community of Manila may support a traffic signal at either or both of these locations as it would address many of the concerns expressed in their Transportation Plan.
- Traffic signals would increase accessibility to and from the local roads.
- Signals decrease broadside collisions.

- The cost to construct a traffic signal is less than a roundabout.

**Cons:**

- Signals increase number of rear-end type collisions.
- The addition of traffic signals to facility (SR 255) may alter traffic patterns as users may find traffic signals in Manila hinder their passing through the town and alternative routes are sought. Conversely, improvements to the Safety Corridor may impact SR 255. Studies have not been conducted to model these changes.
- These two locations do not meet the warrant criteria needed to justify a signal installation.
- Unwarranted traffic control devices along high speed facilities are typically avoided as they have the potential to create a safety issue themselves.
- Unwarranted installations are not supported by Department's Traffic Operations Unit.

**Score:** 39 (See Score Sheet in Attachment N)

**Roundabouts (Manila), Segment 2 (PM 3.64 and/or 3.94)**

**Description:** Modern roundabouts are one-way circular intersections with specific design control features that distinguish them from their predecessor the traffic circle. Modern roundabouts deflect traffic to the right of the central island through placement of splitter islands and approach curvature. Modern roundabouts also operate under a yield-at-entry rule which requires motorists to wait for a gap in the traffic flow within the roundabout before proceeding into the roundabout. The radius of the roundabout and the angle of the approaching lanes on a modern roundabout also promote lower merging and operating speeds within the roundabout.

One of the significant benefits to a roundabout over other conventional intersection types and traffic control treatments is that roundabouts have a proven safety record for reducing motor vehicle crashes. In particular, roundabouts have shown to decrease the severity of collisions and reduce the number of conflict points. In fact, NCHRP Report 572 (May 2006) reported a 35% reduction in all crashes and a 76% reduction in injury crashes at 55 locations where intersections were converted from signalized, all-way stop or two-way stop traffic control to roundabouts. Roundabouts also reduce the number of conflict points by 50% compared to traditional 4-leg intersections.

From an operational perspective, roundabouts can provide higher capacity with lower delays than all-way stop intersections. The opposite is true when comparing a roundabout to a two-way stop intersection as the former free flowing traffic would be required to slow down after installation of a roundabout. For signalized intersections, roundabouts can reduce delays as vehicles generally spend less time in a queue at a roundabout than at a signalized intersection.

Besides operational and safety reasons, roundabouts can meet community enhancement and gateway treatment goals. These types of applications are typically used for local roads, but when considering the context of a highway there may be some locations where roundabout can be used for this purpose.

**Existing Conditions:** See the existing conditions discussion under the traffic signal subsection.

**Proposed Location:** Roundabouts for traffic calming are proposed at two intersections within Segment 2 (see Attachment C). These locations are at the intersections of Lupin Avenue/SR 255 (PM 3.94) and Pacific/Dean/SR 255 (PM 3.64). A third location is at the T-intersection of SR 255 and New Navy Base Road (PM 2.0). The purpose and need for a roundabout at this third location is discussed in the next subsection.

**Feasibility Criteria:** The feasibility of roundabouts along the State Highway System is guided by Caltrans' current Design Information Bulletin (DIB 80-01), which is currently being revised as part of a coalition of agencies including Caltrans. The initiative is referred to as Intersection Control Evaluation (ICE) and is slated for completion in early 2013. This new guidance is expected to adopt a process that will increase consideration, assessment or analysis of yield-control when a new intersection is contemplated. Early indications are that Context Sensitive Solutions and Complete Streets will be part of the roundabout consideration process.

In the mean time, guidance on the roundabout approval process is outlined in DIB 80-01. This document provides general discussion on the Department's roundabout policy, but largely relies on the Federal Highway Administration's technical publication, *Roundabouts: An Informational Guide* (Guide) for most of a roundabout's design details. In the DIB 80-01, exceptions to the FHWA Guide are addressed through an attachment which is primarily used to supersede technical details of roundabout design.

The feasibility of a roundabout in Manila hinges upon meeting the requirements of the DIB 80-01 and receiving conceptual approval from the Department's Traffic Operations Liaisons and Design Coordinators. The former makes the feasibility of a roundabout in Manila complicated because the DIB doesn't address the use of a roundabout for traffic calming and in fact, makes no reference to the term. The latter makes the feasibility of a roundabout in Manila complicated because the recent practice has been to only approve roundabouts when traffic signal warrants are met. On one side of this policy, the opinion is that roundabouts are traffic control devices and a roundabout would not be approved for use without meeting traffic signal warrants (neither intersection meets warrants). The other side supports the concept of allowing a roundabout in Manila based on the context of SR 255, which is not an interregional facility.

As it currently stands, a roundabout in Manila would not be approved. However, a roundabout in Manila may be feasible in the future if the above questions become clarified and/or policy changes with the ICE initiative.

**Installation Sequencing:** Roundabout installation(s) in Manila have been included as long term items of work because the intersections where roundabouts are proposed do not meet signal warrants. Therefore, obtaining a Conceptual Approval as is required in the DIB 80-01, would be difficult to achieve.

Department funding for such an improvement at a location that does not qualify as a Highway Safety Improvement Program (HSIP) project also makes a roundabout a long term alternative. Local funding could be used to construct, but the project isn't expected to compete very strongly with other local initiatives.

Roundabouts are also a long term item as a reduction in the prevailing speeds, which the initial improvements aim to achieve, would make a roundabout more feasible.

**Potential Safety Impacts:** Roundabouts have fewer vehicular conflict points compared to conventional intersections and as was described earlier, this leads to a reduction in the quantity and severity of collisions. The lower speeds at the approaches and within roundabouts contribute to these safety benefits as well.

The Department does have safety related concerns with installing roundabouts on high speed facilities, especially when the location does not meet operational or safety signal warrants which would justify such an installation.

The use of roundabouts on highways has introduced new conditions to vehicular drivers, pedestrians and bicyclists attempting to pass through a roundabout. Where these roundabout features are unfamiliar to these users, navigating through the intersection can be uncomfortable and confusing. Public outreach efforts on the protocol of roundabout operation can be used to inform and educate the

users. Additionally, some features such as signage, bike lanes and non-motorized traffic bypasses can be included in the design of a roundabout to mitigate negative impacts.

**Potential Level of Service Impacts:** Compared to the existing conditions, constructing a roundabout at either of the two Manila intersections would decrease the level of service for SR 255 as the motorists would experience delay while passing through the community. For traffic entering the highway from local roads the amount of delay they experience would be lessened with the installation of a roundabout and thus the LOS for these motorists would slightly increase.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$3,700,000 and \$5,550,000.

**Pros:**

- Based on comments received at the first public meeting and as evidenced by the Manila Community Transportation Plan, roundabouts may be supported by the local residents at either or both of these locations.
- Roundabouts would increase accessibility and reduce delay for the local roads.
- Roundabouts reduce fatal and injury collisions.
- Roundabouts would reduce conflict points at the intersections and reduce the severity of collisions.

**Cons:**

- Members of the traveling public may find roundabouts in Manila to be a hindrance to their passing through the town as they would introduce an unbalance in delay to the system.
- The cost to construct roundabouts is high and finding a funding source for such an improvement will be difficult for these locations.
- Roundabouts require a large footprint and at these locations, environmental impacts would be substantial.
- Roundabouts can be difficult to navigate by bicyclists, pedestrians, especially disabled pedestrians.
- As traffic volumes increase, the capacity of a roundabout may become exceeded and require expensive replacement or reconfigurations.
- Unwarranted traffic control devices along high speed facilities are typically avoided.
- Traffic Operations Unit opposed as traffic volumes do not justify installation.

**Score:** 36 (See Score Sheet in Attachment N)

**All Way Stops (Manila), Segment 2 (PM 3.64 and/or 3.94)**

**Description:** Junctions where all approaches must stop before entering the intersection are controlled by a regulatory stop sign at each leg. Each of these stop signs are accompanied by the supplemental “all way” sign and in the case of a 4-leg intersection, the “all way” sign may be replaced with the supplemental “4-way” sign. Authority to erect a stop sign facing highway traffic is delegated to the Department of Transportation’s District Director.

In some locations Flashing Beacons are included in the configuration of the intersection.

All way stop or 4-way stop are traffic control devices which are installed for a variety of reasons and for the benefit of many forms of traffic. These devices can be installed to aid pedestrians, bicyclists,

streetcars, and ridden or herded animals as well as motor vehicles of all types. When properly used, these signs are valuable devices for the control of traffic and can reduce the frequency and severity of certain types of collisions.

These regulatory signs can be installed at intersections as well as locations where it is desirable to stop the flow of traffic to allow cross movement of other traffic. In this way, stop signs assign right-of-way to the various traffic movements.

Improper or unjustified traffic control signs can result in excessive delay, excessive disobedience of the sign, increase traffic on alternate routes as motorists attempt to avoid a sign, and increase the frequency of collisions.

**Existing Conditions:** For the Manila intersections, the existing traffic control includes stop signs for traffic approaching from the minor streets, while vehicles traveling along SR 255 flow freely through this segment. At the intersection of Lupin Avenue, turning lanes are provided for north and southbound traffic along SR 255. Although there aren't any right turn lanes at these two intersections, drivers frequently use the wide shoulders throughout this section to decelerate and complete right turn movements off of the highway and onto the local streets of Manila.

Based on the Manila Community Transportation Plan (2005), the existing peak hour traffic volumes at the two Manila intersections are illustrated below.

**Proposed Location:** All way stops are proposed at two intersections within Segment 2. These locations are at the intersections of Lupin Avenue/SR 255 (PM 3.94) and Pacific/Dean/SR 255 (PM 3.64). Also considered in this proposal is the possibility of installing these signs at only one of the intersections rather than both of them (see Attachment C).

**Feasibility Criteria:** Guidance on all way stops sign installations is provided in Section 2B of the California Manual on Traffic Control Devices (CAMUTCD). The most recent version (2006) is based on the FHWA's 2003 Edition of the MUTCD. This manual addresses all aspects of proposing, developing, approving, funding, and constructing an all way stop sign installation. Key to determining the feasibility of a signal at any given location is the portion of the manual that provides guidance on STOP sign applications. In particular, the guidance states "STOP signs should be used if engineering judgment indicates that one or more of the following conditions exists:

- A. Intersection of a less important road with a main road where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law;
- B. Street entering a through highway or street;
- C. Unsignalized intersection in a signalized area; and/or
- D. High speeds, restricted view, or crash records indicate a need for control by the STOP sign."

Guidance in the CAMUTCD further states STOP signs should not be used for speed control and should be used in a manner that minimizes the number of vehicles having to stop.

For multiway stop applications, guidance is given as:

The decision to install multiway stop control should be based on an engineering study.

The following criteria should be considered in the engineering study for a multiway STOP sign installation:

- A. Where traffic control signals are justified, the multiway stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

- B. A crash problem, as indicated by 5 or more reported crashes in a 12-month period that are susceptible to correction by a multiway stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.
- C. Minimum volumes:
  - 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day, and
  - 2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour, but
  - 3. If the 85th-percentile approach speed of the major-street traffic exceeds 65 km/h or exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the above values.
- D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Option:

Other criteria that may be considered in an engineering study include:

- A. The need to control left-turn conflicts;
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to reasonably safely negotiate the intersection unless conflicting cross traffic is also required to stop; and
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multiway stop control would improve traffic operational characteristics of the intersection.

**Installation Sequencing:** All way stop sign installation(s) in Manila have been included as a long term improvement because based on the guidance given in the CAMUTCD and the existing conditions, these locations do not support these signs being installed. If traffic conditions change in the future, these devices may become supported.

**Potential Safety Impacts:** As was described earlier, installation of an all way stop can reduce the frequency and severity of some types of collisions. However, they can also lead to more frequent rear end type collisions. Improper or unjustified installation of an all way stop can increase risk.

**Potential Level of Service Impacts:** Compared to the existing conditions, constructing an all way stop at either or both of the two Manila intersections would decrease the level of service for SR 255 as the motorists would experience delay while passing through the community. For traffic entering the highway from local roads the amount of delay they experience would be lessened with the installation of an all way stop and thus, the LOS for these motorists would slightly increase.

**Estimated Construction Costs:** The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$280,000 and \$410,000.

**Pros:**

- The community of Manila may support an all way stop at either or both of these locations as it would address many of their concerns expressed in their Transportation Plan.

- All way stops would increase accessibility and lessens delay from the local roads.
- Can be an effective interim solution to either a roundabout or signal.
- Reduces number of broadside collisions.
- The cost to construct an all way stop is less than either roundabouts or signals.
- Installation can be accomplished quickly.

**Cons:**

- These two locations do not meet the warrant criteria needed to justify an installation.
- Members of the traveling public may find all way stops in Manila to be a hindrance to their passing through the town.
- Vehicular noise would increase as a result of installing all way stops.
- Increases delay to through traffic even more than signals and roundabouts as through traffic would be required to come to a complete stop before passing these locations.
- May cause queuing on major legs during peak periods.
- Would be a temporary solutions as once capacity is exceeded a signal or roundabout would be required.
- Department’s Traffic Operations Unit opposes until traffic volumes justify installation.

**Score:** 36 (See Score Sheet in Attachment N)

**Traffic Signal or Roundabout (Samoa), Segment 2 (PM 2.0)**

**Description:** The concept of a roundabout at the three-way intersection of SR 255 and New Navy Road has been included as a long term item. Details on the need and conditions of this installation are included in the discussion summary of the Samoa Town Master Environmental Impact Report (see Attachment K). A roundabout is not justified without this redevelopment occurring. A roundabout may also not be feasible at this location due to the high speeds of vehicles approaching the roundabout.

In lieu of a roundabout, a signal may be considered at this location if traffic signal warrants are met as a result of an increase in traffic volume from the redevelopment of Samoa. This traffic control device alternative would require less lane reconfiguration at the intersection than the roundabout option because the existing lane configurations are more suited for a signalized intersection.

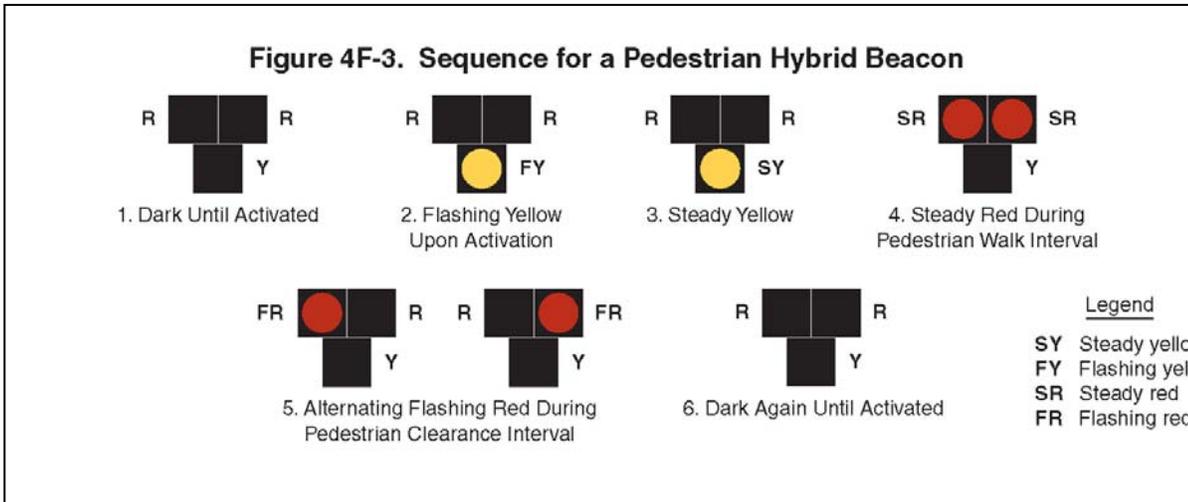
The full evaluation of these intersection treatments is contained within the Samoa Town Master Plan and Master Environmental Impact Report (2007) and partially in Attachment K.

**HAWK Crosswalk, Segment 2 (PM 3.7/3.9)**

**Description:** The High-Intensity Activated crossWalk (HAWK) is also referred to as a Pedestrian Hybrid Beacon in the latest Manual on Uniform Traffic Control Devices (MUTCD). The most recent version of the MUTCD was approved by the FHWA in December 16, 2009. The State of California adopted an amended version (CAMUTCD) in January of 2012.

HAWK’s are similar to traffic signals, but have some distinct features that separate them from traditional traffic signals. The primary difference is the signal head arrangement which consists of three lamps-two red on top and one yellow below (see figure below). Another unique feature of the

HAWK is the “sleep” phase of the signal where all lights of the signal head are dark. This is the predominant phase and the signal lamps will remain dark until a pedestrian arrives at the crosswalk to activate a call to cross. Once the call to cross has been made the fixture will transition through five phases. During Phase 4 all traffic is stopped and pedestrians may cross. All phases are illustrated in the figure below. The MUTCD requires that the following components shall be installed with a HAWK system (see photo above):



1. At least two hybrid beacon faces each traffic approach
2. A stop line for each approach
3. A pedestrian head at each end of the marked crosswalk
4. Pedestrian beacon shall be pedestrian activated.

These devices have been added to the MUTCD as an alternative to providing a pedestrian crossing at a location that does not meet signal warrants or at a location that does meet signal warrants, but the installation of a signal has been declined.

**Existing Conditions:** Crosswalks are not currently provided at any of the legs of the intersections in Segment 2 and excepting stop signs for the minor street approaches, none of the intersection legs are traffic controlled along this route. Warning signage is provided along Segment 2 to alert drivers that pedestrians may be along the roadway ahead. Signs are also installed to inform drivers of most of the approaching intersections.

**Proposed Locations:** Based on data collected for the Manila Community Service District’s Transportation Plan, pedestrians most frequently cross at two intersections along Segment 2- the intersections of Lupin Avenue/SR 255 and Pacific/Dean/SR 255 (see Attachment C). As a result, either of these two intersections is considered to be the most logical locations for crosswalk installation.

A third alternative location considered for installation of a HAWK system is midway between the Lupin Avenue/SR 255 and Pacific/Dean/SR 255 intersections.

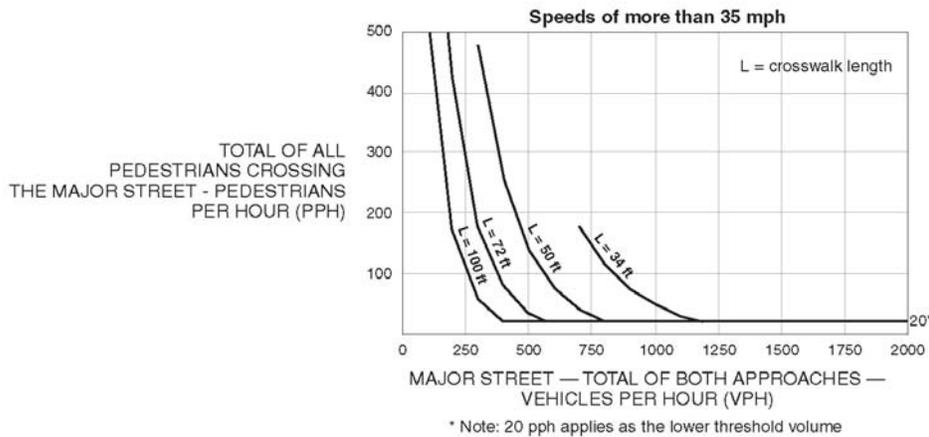
**Feasibility Criteria:** Guidance in the MUTCD recommends that a HAWK system can be considered at locations meeting the following conditions:

*“If a traffic control signal is not justified under the signal warrants of Chapter 4C and if gaps in traffic are not adequate to permit pedestrians to cross, or if the speed for vehicles approaching on the major street is too high to permit pedestrians to cross, or if pedestrian delay is excessive, the need for a pedestrian hybrid beacon should be considered on the basis of an engineering study that considers major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay.”*

The MUTCD also specifies the thresholds and conditions that need to be met to justify a HAWK installation. Essentially, the guidance given in the MUTCD supports considering HAWK where the speed and volume of cross traffic causes excess delay and/or increased risk to the crossing pedestrian. With the MUTCD method, the data collected in an engineering study is used on one of two charts to determine whether a HAWK is appropriate.

As mentioned previously, three traffic surveys have been conducted in the Manila area. Based on the data obtained from these surveys and other sources, the following chart from the MUTCD applies to the installation of a HAWK along Segment 2.

**Figure 4F-2. Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways**



To date, no HAWK systems have been installed in California. The City of Emeryville requested the California Traffic Control Device Committee (CTCDC) for an approval to install such a device on an experimental basis in 2007. That request was declined due to the Committee’s concerns that such a device would conflict with current vehicular codes. Specifically, the Committee was concerned firstly whether the signal head of the HAWK system is considered a signal and secondly whether the “sleep” phase of the device would require all vehicles to stop before driving through the signalized area. The City of Emeryville was unsuccessful in gaining approval from the Committee and abandoned the proposal.

**Installation Sequencing:** HAWK crossings are proposed as a future improvement. The primary reason for HAWKs being a future proposal is based on these intersections not meeting the warrant criteria for their installation.

**Potential Safety Impacts:** The safety of all users of the highway is a concern for the Department and the installation of a new type of crosswalk such as a HAWK system creates an initial condition where drivers may be unfamiliar with the meaning of the signals. This could lead to driver error and/or non-compliance with the device. Over time, this will become less of a factor as the mostly local drivers along this route become familiar with the HAWK system.

A recent study of several types of pedestrian crossing improvements indicated a compliance rate of 97% for a HAWK system. For comparison, a system comprised of overhead flashing beacons had an average compliance rate of 48% and a crossing equipped with high visibility signs and markings had an average rate of 31%.

Introducing a HAWK system which would stop the existing free-flowing traffic along this highway fosters a situation where motorists may fail to recognize the need to stop or may misjudge the

behavior of other drivers. Such a scenario that requires greater driver response also may increase the level of inherent risk.

**Estimated Construction Cost:** The cost to install a HAWK system is based on the construction cost of the system itself and does not include any costs for improvements constructed to support the HAWKS, such as sidewalks leading up to the crosswalk. The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$400,000 and \$600,000.

**Pros:**

- HAWKS have demonstrated a high compliance rate compared to other types of pedestrian crossings.
- When properly used by non-motorized users, HAWKS can provide users a safer means to crossing the highway.
- HAWKS can add to the cumulative effect of queuing drivers to a change in conditions.

**Cons:**

- Pedestrians crossing the highway may take greater risk when using crosswalks.
- Pedestrians crossing the highway will cause vehicular traffic to come to a stop while the pedestrian crosses. This introduces delay to the system.
- Stopped traffic along a high speed highway may also increase the probability of collisions.
- Current pedestrian volumes may be insufficient to justify installation.
- Improvement not supported as vehicle volumes and pedestrian volumes do not meet warrant requirements of CAMUTCD.
- Not supported by the Department's Traffic Safety Unit.

**Standard Crosswalk, Segment 2 (PM 3.64 and/or 3.94)**

**Description:** Crosswalk markings define and delineate paths for pedestrians crossing roadways. Crosswalks also help alert drivers of pedestrian crossings areas when the crossing is not located at intersections controlled by traffic control devices such as stop signs or yield signs.

**Existing Conditions:** See the existing condition discussion under the previous future improvement feature- HAWK Crosswalks.

**Proposed Locations:** Based on data collected for the Manila Community Service District's Transportation Plan, pedestrians most frequently cross at two intersections along Segment 2- the intersections of Lupin Avenue/SR 255 and Pacific/Dean/SR 255 (see Attachment C). As a result, these two intersections are considered to be the most beneficial locations for crosswalk installation.

**Feasibility Criteria:** Guidance in the MUTCD recommends that crosswalks not be used indiscriminately and that an engineering study be performed prior to installing crosswalk markings at locations where a traffic control device is not installed. As part of such an engineering study, several factors are recommended for consideration such as "*...the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.*"

The MUTCD also recommends that,

*“New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:*

*A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or*

*B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.”*

**Installation Sequencing:** As part of this report, an engineering study was conducted to assess the conditions at the two main intersections in Manila. The data from the engineering study was used in part to examine the feasibility of installing a crosswalk in Manila. The conclusion of the engineering study is that with the high vehicular speeds along SR 255, installing a crosswalk without any other measures would increase pedestrian/bicyclist risk. Further, the engineering study highlighted that the number of pedestrians crossing the route do not meet the minimum number required for either a signalized or unsignalized crosswalk. Consequently, the approach taken is to propose standard crosswalks as a future improvement option which would be feasible with an increase in pedestrian crossings and a decrease in vehicular speeds as a result of the proposed short term improvements.

**Potential Safety Impacts:** The installation of crosswalk(s) creates a situation that may increase the risk to non-motorized users utilizing these crosswalk(s). This risk is a result of non-motorized users not taking precautionary measures to avoid putting themselves in harms way, such as when a pedestrian steps into the roadway with the expectation that a motorized vehicle driver will stop for them.

**Estimated Construction Cost:** The cost to install crosswalks themselves is relatively low as the materials required for construction are limited to thermoplastic pavement marking and signage. Improvements constructed to support the crosswalks could have significant costs, but have been itemized separately as those improvements were scoped separately as part of other proposals. The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$56,000 and \$84,000.

**Pros:**

- When properly used by non-motorized users, crosswalks installed with the appropriate supporting devices such as signage, traffic islands (medians), lights etc can provide users a safer means to crossing the highway.
- Crosswalks can add to the cumulative effect of queuing drivers to a change in conditions.
- Cost of a crosswalk installation alone is minimal.

**Cons:**

- Pedestrians crossing the highway may take greater risk when using crosswalks.
- Pedestrians crossing the highway will cause vehicular traffic to slow or come to a stop while the pedestrian crosses. This introduces delay to the system.
- In general, crosswalks are not supported on high speed facilities.
- Lack of collision history involving pedestrians and bicyclists.
- High vehicle speeds from both directions make location less suitable.
- Wide roadway section coupled with high speeds makes crosswalks less safe.
- Existing day and night visibility issues for both motorized and non-motorized traffic.

- Stopped traffic along a high speed highway may also increase the probability of collisions.

### **Pedestrian Grade Separation Crossings, Segment 2 (PM 3.75/3.94)**

**Description:** Overcrossings and undercrossings provide a means for pedestrians and bicyclists to safely cross a roadway without interfering with the flow of the opposing vehicular traffic or waiting for acceptable gaps between the opposing traffic. Overcrossings are structures that provide grade separation between vehicular traffic and non-motorized traffic by routing the non-motorized traffic over the roadway on a bridge type structure. Undercrossings similarly separate the modes of traffic, but route non-motorized traffic under the roadway through structures such as large reinforced concrete boxes or as pictured below, corrugated metal arched pipes. In either case, these structures are designed to meet the requirements of the Americans with Disability Act (ADA) and the criteria within the Caltrans Highway Design Manual (HDM).

**Existing Conditions:** Other than some pedestrian warning signage along the highway, Segment 2 of SR 255 is currently devoid of improvements that aid pedestrians or bicyclists in crossing this 2-lane expressway. Lack of any such improvements and a concern for crossing safety amongst members of the community has led to several comments requesting that crossing improvements be installed along this segment.

**Proposed Locations:** Because data collected for the Manila Community Service District's Transportation Plan indicates that pedestrians most frequently cross at two intersections along Segment 2- the intersections of Lupin Avenue/SR 255 and Pacific/Dean/SR 255, these two intersections or the vicinity thereof, are considered to be the area where an over/under-crossing would provide the greatest benefit (see Attachment C).

**Feasibility Criteria:** Section 105.2 of the Caltrans Highway Design Manual (HDM) addresses an assortment of criteria that need additional study to evaluate a location for a pedestrian/bicyclist grade separation installation. Although this manual does not provide actual pedestrian or bicycle traffic thresholds, the manual does recommend some factors that should be studied to determine the feasibility of pedestrian/bicyclist grade separation improvements. Some of the criteria should include present and projected traffic and pedestrian/bicyclist volumes, traffic speeds, type of highway, project location and adjacent land use.

State participation in financing of these structures is not normally justified and exceptions are only warranted under special circumstances where less expensive alternatives have been determined to be infeasible. Further, at locations where the construction of a separation is justified and a freeway agreement is already in place the State's share of the total construction costs should not exceed 50 percent.

At locations where construction of a pedestrian/bicyclist grade separation is warranted, overcrossings are the preferred type of structure. An undercrossing may be considered when requested in writing by a local agency. For safety and security, undercrossing structures should provide unobstructed view through the structure and approaches.

Section 208.6 of the Caltrans Highway Design Manual (HDM) advises that pedestrian overcrossings should be 8' wide and the maximum ramp grade for an overcrossing should be 8.33 percent with a maximum rise of 30 inches between each 5' landing. Vertical clearances for an over-crossing should be 18.5'. Based on ramp slope and vertical clearance criteria, the length of each ramp would be 303'. The length across SR 255 is approximately 72', which would bring the total length of ramps and over-crossing to 678' at this location.

Design criteria for undercrossings must meet ADA requirements as well. The undercrossing structures also need to provide clear view from one entry to the other and in some cases may require drainage equipment such as sump pumps.

The HDM provides guidance on barrier and railing requirements for bridges in Section 208.10. In which, the manual recommends in urban areas or other locations as determined to be appropriate for an overcrossing, that pedestrian fence screening be provided to prevent objects from being tossed onto the highway below. The minimum height of a pedestrian screen is 6'. Further, the manual provides guidance on bicyclist railing as well. The minimum height of a bicycle railing is 54 inches. The two of these treatments may be combined into the design of one railing/screen.

**Installation Sequencing:** Both over and undercrossing type pedestrian grade separations were determined to be long term improvements as the cost to construct these types of structure is significant and the number of pedestrians or bicyclists using either of these structures would not justify the costs. Further, the environmental impacts of the structures would be substantial.

**Potential Safety Impacts:** The installation of an overcrossing would not decrease the level of safety to pedestrian or bicycle users as long as supporting improvements such as sidewalks were installed in conjunction with an over/undercrossing.

**Overcrossing Estimated Construction Cost:** Because of the size of the structure needed to span the highway, the cost to install an overcrossing is relatively high compared to at grade pedestrian/bicycle crossing improvements. The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$2,940,000 and \$4,410,000.

**Undercrossing Estimated Construction Cost:** An undercrossing is intuitively less costly than an overcrossing, but is still significantly higher than at grade crossing improvements previously mentioned. Due to issues with groundwater, tidal influences, and security needs, cost for constructing an undercrossing were not calculated as these structures are not viable.

**Pros:**

- The introduction of either of these improvements will not add delay to the system.
- If constructed, non-motorized users of this improvement will be able to cross the highway unimpeded and safely.

**Cons:**

- The present and projected future number of pedestrians and bicycles crossing the highway combined with the estimated vehicular traffic volumes do not justify the high cost of these improvements.
- The visual and environmental impacts of constructing an overpass are considerable.
- An undercrossing would require a dewatering system and would be affected by tidal influences, which would increase the daily energy consumption.
- Undercrossings would require greater security or law enforcement efforts, thus may not be viable
- Due to the existing residential structures and local road intersections, obtaining a clear line of sight from end to end of an undercrossing would be difficult in Manila.

## **Bus Turnout, Segment 2 (PM 3.79)**

**Description:** Typically, bus turnouts are located in urban settings where it is desirable to have buses pull out of the travel way so that through traffic is not impeded during loading and unloading of passengers. Although Caltrans does not have a standard design for a bus turnout, design criteria for typical highway features could be extended to guide the design of a bus turnout. For instance, the configuration and location of a turnout could be determined by applying the conditions that define safe sight distances or separation between features. Additionally, turnouts should be installed with other supporting infrastructure such as sidewalks or paths so that reasonable access to the turnouts is provided. Shelters for bus riders are preferred at bus stops, but are not compulsory.

**Existing Conditions:** Currently, bus service is provided to the Manila Community by the Redwood Transit Service. Bus stops for both northbound and southbound users are not located directly on SR 255 as they are positioned closer to the residences they serve. One pair of stops (one for northbound and one for southbound buses) is located on the east side of town at the intersection of Lupin and Peninsula near the community park. The second pair of stops is located on the west side of town on Peninsula Drive near the Community Center. Buses stop at each of these locations 5 times per weekday and 4 times each day on the weekends. Shelters aren't provided at these locations. Ridership counts will be conducted soon. While schools were in session in 2010, a survey of Manila ridership was made and results for a 22-day period were recorded as follows:

BUS DIRECTION	BOARDING	ALIGHTING
Northbound	127	189
Southbound	194	53

**Proposed Locations:** Two bus turnouts are evaluated along State Route 255. One turnout would serve northbound users and the second would serve southbound users. These turnouts would be located approximately across from each other on the highway and would be in-between the intersections of Lupin Avenue/SR 255 and Pacific/Dean/SR 255 (see Attachment C).

**Feasibility Criteria:** The feasibility of constructing a turnout is based on criteria such as existing topographic conditions, existing highway improvements, user demand and community preferences. The topography influences feasibility because some topographic features such as dunes or waterways make construction of a turnout impractical. Conflicts with corner sight distance and other criteria can make turnout construction along the existing highway improvements prohibitive. Without user support, investment in turnouts on the highway would not be justified.

Community input suggests that the preference is that two bus stops be provided at each end of town. However, the above described factors make locating two pairs of turnouts within the right of way prohibitive.

A transit rider survey conducted by HCAOG in May of 2011 asked riders of the RTS Intercity Service the following question *“If you ride the bus in Manila, would you rather have the bus stops located on or off Highway 255 (New Navy Base Road)?”* Of the 36 responses, 61% preferred the stops off the highway. While the responses to this survey question do indicate a preference that bus service be off-line of the highway, the question was not phrased to include consideration of an on-line stop with new pedestrian and bicyclist facilities along the highway. Such a consideration may have yielded different results.

**Potential Safety Impacts:** The impact on the safety of the highway as a result of a turnout installation can be minimized by selecting locations that meet highway design criteria. Given the

above criteria, the potential locations for turnouts have been narrowed down to the straight away section of the highway between the highway intersections of Lupin and Dean/Pacific. Turnouts located here would avoid negatively impacting corner sight distances at the intersections.

**Estimated Construction Cost:** Costs for the construction of sidewalk, shelters, curb and gutter are included. The range of costs for project development (support costs), environmental (permits and mitigation), and construction is between \$960,000 and \$1,440,000.

**Pros:**

- Having stops along the highway will allow buses to pass through Manila more quickly which will increase the efficiency of the system.
- The addition of bus stops to the roadside will help cue drivers that the conditions have changed and may contribute to the overall traffic calming along the segment.
- May encourage transit ridership which reduces single occupancy ridership.

**Cons:**

- Most Manila residents that ride the bus would have to walk further than they currently do to access this transit stop.
- Buses weaving in and out of the through lanes can be hazardous if bus turnouts are not properly designed.
- May encourage pedestrians to cross the highway at non-desirable locations.
- Transit Authority does not currently plan to install a stop on the route.

# **ATTACHMENT R**

COLLISION DATA

## Attachment R Collision Data

### Annual Average Number of Collisions in Segment (PM 2.529 thru 4.959)

Range	Actual F + I	Actual Total
1/1/1996 to 12/31/2000	1.4	4.2
5/19/2002 to 5/18/2006	3.0	8.0
5/19/2006 to 5/18/2010	2.0	4.8

### Collision Rates at Intersections (PM 2.529 thru 4.959)

4 Year Period 5/19/2002 thru 5/18/2006

Street Name	PM	Actual F + I	Actual Total	Statewide Average F + I	Statewide Average Total	Percent of Statewide Average F + I	Percent of Statewide Average Total
Vance Ave	2.529	0	0	0.08	0.20	0%	125%
Peninsula Drive	2.892	0.23	0.23	0.08	0.20	288%	230%
Pdean/Pacific Ave	3.657	0.42	0.42	0.13	0.30	323%	280%
Lupin/Victor Ave	3.959	0	0	0.13	0.30	0%	183%
Carlson Drive	4.19	0.11	0.11	0.13	0.30	85%	37%
Private Road (Stamps Lane)	4.494	0.11	0.11	0.07	0.15	157%	227%
Young Lane	4.728	0	0	0.13	0.30	0%	40%
Driveway	4.826	0	0	0.07	0.15	0%	0%
<i>Collision rates are expressed as # of Collisions per Million Vehicles (Col/MV)</i>							
<i>Red indicates above statewide average</i>							

### Collision Rates at Intersections (PM 2.529 thru 4.959)

4 Year Period 5/19/2006 thru 5/18/2010

Street Name	PM	Actual F + I	Actual Total	Statewide Average F + I	Statewide Average Total	Percent of Statewide Average F + I	Percent of Statewide Average Total
Vance Ave	2.529	0.09	0.09	0.08	0.20	113%	45%
Peninsula Drive	2.892	0	0.09	0.08	0.20	0%	45%
Pdean/Pacific Ave	3.657	0	0.17	0.13	0.30	0%	57%
Lupin/Victor Ave	3.959	0.19	0.56	0.13	0.30	146%	187%
Carlson Drive	4.19	0	0	0.13	0.30	0%	0%
Private Road (Stamps Lane)	4.494	0.1	0.38	0.07	0.15	143%	253%
Young Lane	4.728	0	0	0.13	0.30	0%	0%
Driveway	4.826	0	0	0.07	0.15	0%	0%
<i>Collision rates are expressed as # of Collisions per Million Vehicles (Col/MV)</i>							
<i>Red indicates above statewide average, Highlighted fields indicate increase in rates (Table 3 vs Table 4).</i>							

Primary Collision Factors Reported

<b>Intersection with SR 255</b>	<b>Speeding</b>	<b>Improper Turn</b>	<b>Failure to Yield</b>	<b>Driving Under the Influence</b>	<b>Other Violations</b>
Pacific/Dean	4	1	1	1	0
Lupin Ave	2	0	3	0	2

Types of Collisions

<b>Intersection with SR 255</b>	<b>Broadside</b>	<b>Sideswipe</b>	<b>Rear End</b>	<b>Hit Object</b>
Pacific/Dean	1	1	2	3
Lupin Ave	4	1	1	1