City of Arcata

FY20/21 STIP Program
November 17, 2017

PROJECT STUDY REPORT (PSR)
Old Arcata Road
Rehabilitation & Pedestrian/Bikeway Improvements
Project Limits: The limits of the project are within Arcata right of way along Old Arcata Road, from the Buttermilk Road Roundabout to Jacoby Creek Road all within Arcata City limits, and a small portion of County right of way at Jacoby Creek Road.

1 Need and Purpose

The Bayside community is an unincorporated area located in Southern Arcata in Humboldt County, California. The area is mostly a rural residential area with a few commercial businesses and Jacoby Creek School located on the main road, Old Arcata Road. Old Arcata Road runs through the community and is a regionally significant arterial route for Arcata and the Bayside community. The road acts as an alternative route and oversized load route for Highway 101, provides access to important facilities such as the Sunnybrae Middle School, Jacoby Creek School, and the Bayside Post Office, and provides access to unincorporated areas.

The purpose of this PSR is to show the need for the improvements along Old Arcata Road to promote pedestrian, bicyclist, and motorist safety. Currently, the road experiences motorists travelling at high speeds and provides limited pedestrian/bicyclist facilities. The road condition varies throughout the project area but a large amount scored “poor” for its pavement condition index (PCI) (NCE, 2017).

Not proceeding with this project will result in continued deterioration of the roadway surface along this street segment. Important access routes to the schools, the Post Office, and unincorporated areas would be negatively affected. Pedestrian access will remain in its limited state. Not proceeding with traffic calming measures on this busy road would compromise the safety of school children, pedestrians, cyclists and motor vehicles.

2 Brief Project Description

A State Transportation Improvement Program (STIP) project was previously approved to rehabilitate 5,900 feet of Old Arcata Road/ Samoa Blvd. from the Buttermilk Road Roundabout to Jacoby Creek Road. The project also includes widening/ improvement to Class 2 Bike lanes, improvement of pedestrian paths, and intersection safety improvements at Jacoby Creek Road through the implementation of a roundabout or channelization work. Since this project is off the State Highway System, this report serves as the Project Study Report Equivalent for programming purposes.

2.1 Current Condition

The project area has a two-lane road with a dashed center line and narrow shoulders. Striped bike lanes are present at some locations and also serve pedestrians. A 4-ft wide separated pedestrian path is present along the western portion of the road and is separated by vegetation varying between 2 and 8 ft. The path runs from Buttermilk Lane to Jacoby Creek School. A designated pedestrian path is not present south of the school.

A 2016-2017 Pavement Management Update showed that a majority of the pavement in the project area is in poor condition. The average PCI for the project area was 61.6. The pavement condition north of the Jacoby Creek School has the worst PCI ranging from 37 to 41 and accounts for the majority of the project area. The remaining road condition was classified as "fair" with an estimated remaining life of 18 years before conditions fall to "poor/very poor" (NCE, 2017).

Figure 2.1 Image of the Old Arcata Road showing the road's current condition and the separated path (SHN et al., 2017).

A pavement condition survey, made in 2010, revealed that the pavement section is failing throughout. Frequent areas of raveling, pumping, potholes, transverse and alligator cracks have been observed. The Surface Profile (SP) or "ride" has been reevaluated as rough to fair. The paved shoulders are showing structural failure at the joint between the paved shoulder and the old travel lanes. Alligator and longitudinal cracks dominate the outside wheel path. The previous pavement condition survey indicated rehabilitation was warranted in 1999 and the current survey shows continuing to degradation of the pavement section.

3 Project Alternatives

Alternatives for Old Arcata Road were conceived by separately developing improvements for the corridor of the road between Buttermilk Lane and Jacoby Creek Road and the Jacoby Creek Road intersection. Two improvements were created for each item and produced four alternatives outlined below.

For all alternatives, the road will be grinded and repaved throughout the whole project area. Roadways will require a 0.75' - 1' depth of class II aggregate base and 0.3' depth of asphalt concrete. The path will require 0.5' depth of class II aggregate base and 0.17' depth of asphalt concrete. Striping will be done to separate bicycle lanes. The current separated path located in the northern part of the project area will be replaced by a separated path that meets ADA standards. The vegetated buffer strip between the separated path and the roadway will act as a low impact design (LID) for stormwater runoff. The northern segment where Bayside Road and Old Arcata Road connect will add benches and landscaped vegetation to the grassy island and convert Bayside Road into a shared road with markings (Figure 3.1).

Based on the preliminary survey work the project area is within the City's and County's right-of-way (ROW) and does not require the acquisition of additional right of way, access rights, or relocation.

Figure 3.1 Proposed improvements to the Northern Segment where Bayside Rd. and Old Arcata Rd. meet (SHN et al., 2017).

3.1 Alternative One: Separated Path with Narrowed Sections and Raised Island at Jacoby Creek Road Intersection

Alternative One proposes a separated path throughout the whole project area and narrowing and adding a raised island at the Jacoby Creek Rd. intersection. The separated path will run along the western side of Old Arcata Rd. and will be a 6-foot wide path with a 4-foot wide vegetated buffer strip between the path and the road. Road improvements, including new paving and striping, will be done throughout the entire span of the project area and result in two 10-foot wide travel lanes and two 5-foot wide bicycle lanes. The current separated path located in the northern part of the project area will be replaced to meet current accessible standards.

Figure 3.2 Proposed cross-section of the Jacoby Creek School Frontage with the separated path alternative stated in Alternatives One and Two (SHN et al., 2017).

At the Jacoby Creek Rd. intersection, a raised island will be placed directly north of the intersection to narrow the road way and reduce vehicle speeds. Jacoby Creek Rd. will also be narrowed at the intersection to reduce speeds of north bound vehicles turning right. A sidewalk with a raised curb will be placed on the eastern side of the road and would only be present near the intersection. One-way traffic will be implemented at the Post Office to make traffic flow more predictable.

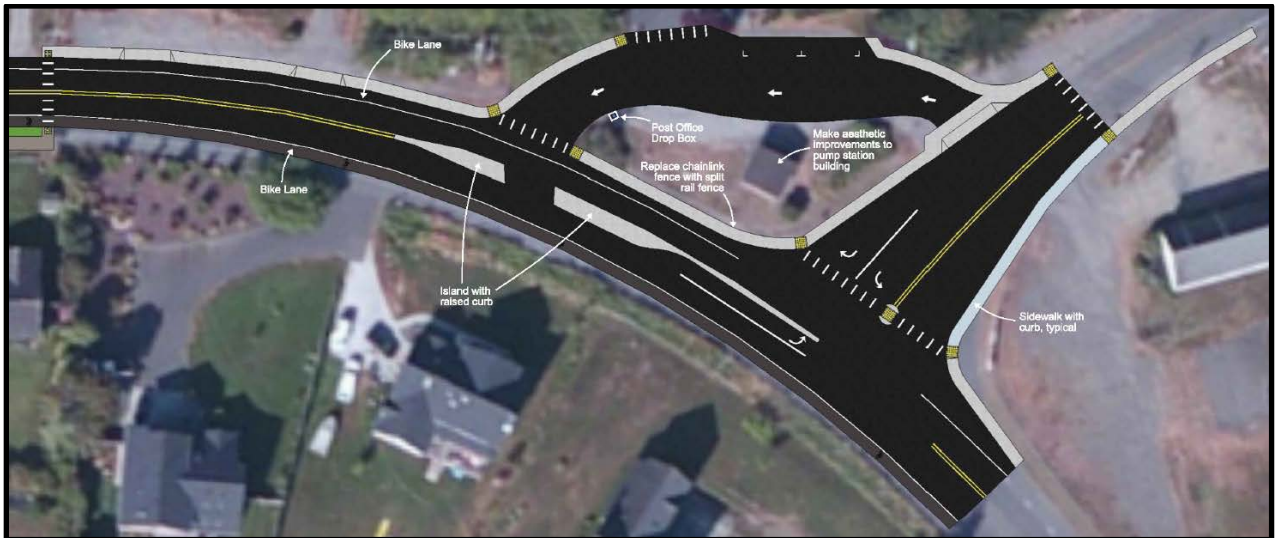

Figure 3.3 Proposed Jacoby Creek Road intersection suggested in Alternatives One and Three (SHN et al., 2017).

Table 3.1 outlines the estimated preliminary project cost for Alternative One.

Table 3.1 Preliminary project costs for Alternative One. Cost estimates include construction and material costs, permits and studies, and preparation of plans, specifications, and estimates.

Preliminary Construction Costs					
Item No.	**Item**	**Quantity**	**Units**	**Unit Cost**	**Total Item Cost**
1	Mobilization	1	LS	$100,000	$100,000
2	Traffic Control	1	LS	$150,000	$150,000
3	Construction Staking	1	LS	$50,000	$50,000
4	Erosion Control & SWPPP	1	LS	$30,000	$30,000
5	Clearing & Grubbing	1	LS	$40,000	$40,000
6	Roadway Excavation	3,230	CY	$65	$209,950
7	Roadway/Walkway Demolition & Disposal	58,080	SF	$5	$290,400
8	AC Grinding	132,000	SF	$1	$132,000
9	Class II Aggregate Base	7,653	CY	$75	$573,975
10	PCC Curb (flush)	785	LF	$30	$23,550
11	PCC Sidewalk	3,925	SF	$12	$47,100
12	PCC Driveway	640	SF	$50	$32,000
13	Hot Mix Asphalt (Roadway)	4,101	TON	$120	$492,120
14	Hot Mix Asphalt (Separated Path)	397	TON	$120	$47,640
15	Swale Construction and Soil	6,000	SF	$5	$30,000
16	Swale Plants & Hydroseed	1	LS	$30,000	$30,000
17	Striping	1	LS	$40,000	$40,000
18	Road Signage	1	LS	$30,000	$30,000
				Construction Cost Subtotal:	$2,349,000
				Contingency (30%):	$705,000
				Construction Total:	**$3,054,000**
Professional Services Costs					
Environmental Studies & Permitting (5% Construction Fees)					$153,000
Plans, Specifications & Estimates (10% Construction Fees)					$306,000
Construction Services (CM, Admin, Testing) (10% Construction Fees)					$306,000
				Professional Services Cost Subtotal:	$765,000
				Contingency (30%):	**$230,000**
				Total Estimated Project Costs:	**$4,049,000**

3.2 Alternative Two: Separated Path with Roundabout at Jacoby Creek Road Intersection

Alternative Two proposes the same corridor changes outlined in Alternative One. A separated path will run from the Jacoby Creek School frontage to the Jacoby Creek Rd. intersection. The corridor dimensions will contain a 6-foot wide path, a 4-foot wide vegetated buffer strip, two 10-foot wide travel lanes, and two 5-foot wide bicycle lanes.

A roundabout will be constructed at the Jacoby Creek intersection. A roundabout will narrow the width of the road and reduce speeds at the intersection. Bicycle lanes will continue through the roundabout on both sides of the road. One way traffic will be implemented at the Post Office.

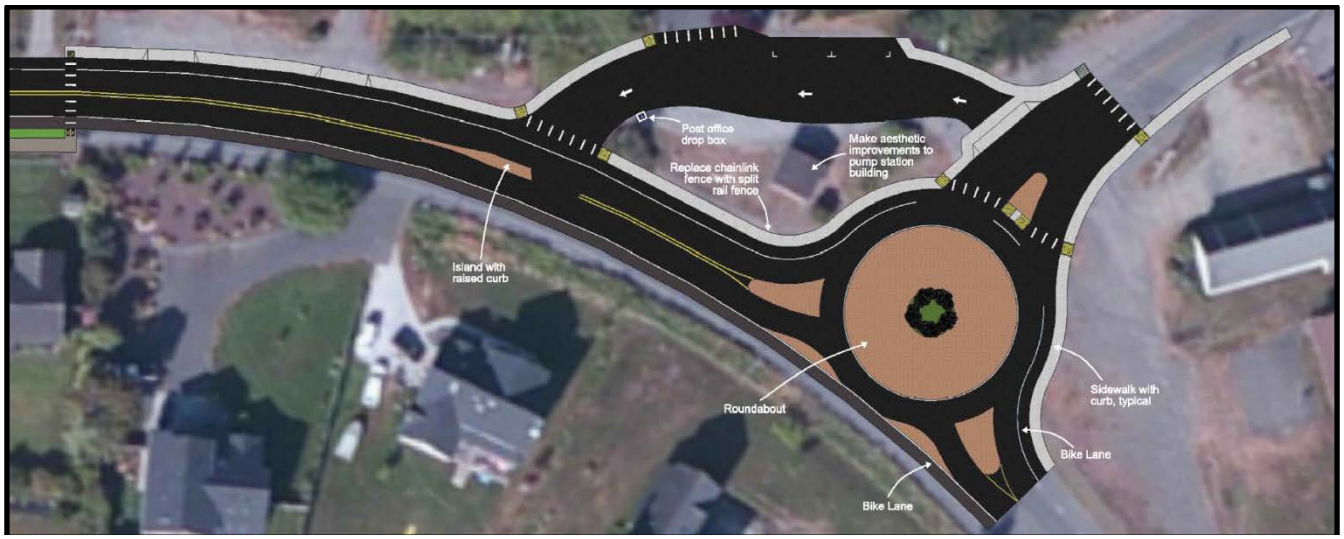

Figure 3.4 Proposed roundabout at the Jacoby Creek Road intersection. This option is presented in Alternatives Two and Four (SHN et al., 2017).

A preliminary cost estimate for Alternative Two is present in Table 3.2.

Table 3.2 Preliminary project costs for Alternative Two. Cost estimates include construction and material costs, permits and studies, and preparation of plans, specifications, and estimates.

Preliminary Construction Costs					
Item No.	**Item**	**Quantity**	**Units**	**Unit Cost**	**Total Item Cost**
1	Mobilization	1	LS	$100,000	$100,000
2	Traffic Control	1	LS	$150,000	$150,000
3	Construction Staking	1	LS	$50,000	$50,000
4	Erosion Control & SWPPP	1	LS	$30,000	$30,000
5	Clearing & Grubbing	1	LS	$40,000	$40,000
6	Roadway Excavation	3,230	CY	$65	$209,950
7	Roadway/Walkway Demolition & Disposal	58,080	SF	$5	$290,400
8	AC Grinding	132,000	SF	$1	$132,000
9	Class II Aggregate Base	6,980	CY	$75	$523,500
10	PCC Curb (flush)	770	LF	$30	$23,100
11	PCC Sidewalk	3,850	SF	$12	$46,200
12	PCC Driveway	640	SF	$50	$32,000
13	Hot Mix Asphalt (Roadway)	4,107	TON	$120	$492,840
14	Hot Mix Asphalt (Separated Path)	397	TON	$120	$47,640
15	Swale Construction and Soil	6,000	SF	$5	$30,000
16	Swale Plants & Hydroseed	1	LS	$30,000	$30,000
17	Striping	1	LS	$40,000	$40,000
18	Road Signage	1	LS	$30,000	$30,000
				Construction Cost Subtotal:	$2,298,000
				Contingency (30%):	$690,000
				Construction Total:	**$2,988,000**

Professional Services Costs	
Environmental Studies & Permitting (5% Construction Fees)	$150,000
Plans, Specifications & Estimates (10% Construction Fees)	$299,000
Construction Services (CM, Admin, Testing) (10% Construction Fees)	$299,000
Professional Services Cost Subtotal:	**$748,000**
Contingency (30%):	**$225,000**
Total Estimated Project Costs:	**$3,961,000**

3.3 Alternative Three: Curbed Sidewalk at Jacoby Creek School with Narrowed Sections and Raised Island at Jacoby Creek Road Intersection

Alternative Three is similar to Alternative One because it adds both a separated path and the raised island at the Jacoby Creek intersection. This alternative differs by adding a curbed sidewalk to the Jacoby Creek School Frontage. A curb sidewalk is already present on the eastern side of the road and would add a curbed sidewalk along the western side of the road. This section of the road would contain two 10-foot wide travel lanes, two 5-foot wide bicycle lanes, and two five-foot wide sidewalks. A separated path with dimensions stated in Alternative One will begin south of the school and continue till the Jacoby Creek Road intersection.

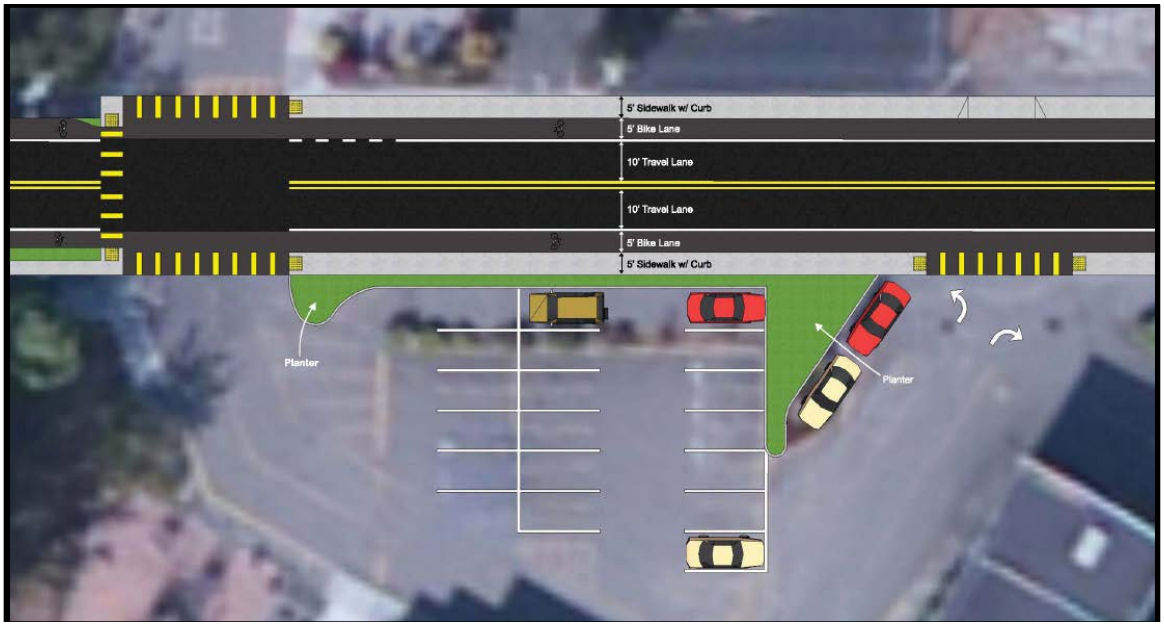

Figure 3.5 Proposed cross-section of the Jacoby Creek School Frontage with the proposed sidewalk option stated in Alternatives Three and Four (SHN et al., 2017).

The Jacoby Creek intersection will contain a raised island directly north of the intersection that will narrow the road and promote slower speeds as north bound vehicles are entering Bayside. Jacoby Creek Rd. will also be narrowed at the intersection and one way traffic through the Post Office will be implemented.

Table 3.3 outlines the preliminary cost estimates for Alternative Three.

Table 3.3 Preliminary project costs for Alternative Three. Cost estimates include construction and material costs, permits and studies, and preparation of plans, specifications, and estimates.

Preliminary Construction Costs					
Item No.	**Item**	**Quantity**	**Units**	**Unit Cost**	**Total Item Cost**
1	Mobilization	1	LS	$100,000	$100,000
2	Traffic Control	1	LS	$150,000	$150,000
3	Construction Staking	1	LS	$50,000	$50,000
4	Erosion Control & SWPPP	1	LS	$30,000	$30,000
5	Clearing & Grubbing	1	LS	$40,000	$40,000
6	Roadway Excavation	3,230	CY	$65	$209,950
7	Roadway/Walkway Demolition & Disposal	58,080	SF	$5	$290,400
8	AC Grinding	132,000	SF	$1	$132,000
9	Class II Aggregate Base	7,675	CY	$75	$575,625
10	PCC Curb (flush)	1,365	LF	$30	$40,950
11	PCC Sidewalk	6,825	SF	$12	$81,900
12	PCC Driveway	640	SF	$50	$32,000
13	Hot Mix Asphalt (Roadway)	4,101	TON	$120	$492,120
14	Hot Mix Asphalt (Separated Path)	376	TON	$120	$45,120
15	Swale Construction and Soil	4,800	SF	$5	$24,000
16	Swale Plants & Hydroseed	1	LS	$30,000	$30,000
17	Striping	1	LS	$40,000	$40,000
18	Road Signage	1	LS	$30,000	$30,000
				Construction Cost Subtotal:	$2,395,000
				Contingency (30%):	$719,000
				Construction Total:	**$3,114,000**
Professional Services Costs					
Environmental Studies & Permitting (5% Construction Fees)					$156,000
Plans, Specifications & Estimates (10% Construction Fees)					$312,000
Construction Services (CM, Admin, Testing) (10% Construction Fees)					$312,000
				Professional Services Cost Subtotal:	**$780,000**
				Contingency (30%):	**$234,000**
				Total Estimated Project Costs:	**$4,128,000**

3.4 Alternative Four: Curbed Sidewalk at Jacoby Creek School with Roundabout at Jacoby Creek Road Intersection

Alternative Four is similar to Alternative Two but replaces the separated path with a curbed sidewalk at the Jacoby Creek School frontage. A curbed sidewalk is already present on the eastern side of the road directly across from the school. A curbed sidewalk would be installed on the western side of the road. The separated path will continue south of the school and continue to the Jacoby Creek Rd. intersection.

A roundabout would be placed at the Jacoby Creek Road Intersection and will narrow the width of the road to reduce speeds. The Post Office drive will be one-way traffic and bike lanes will be present in both directions.

Table 3.4 show the preliminary cost estimates for Alternative Four. Alternative Four is the preferred alternative and will be executed with the funding.

Table 3.4 Preliminary project costs for Alternative Four. Cost estimates include construction and material costs, permits and studies, and preparation of plans, specifications, and estimates.

Preliminary Construction Costs					
Item No.	**Item**	**Quantity**	**Units**	**Unit Cost**	**Total Item Cost**
1	Mobilization	1	LS	$100,000	$100,000
2	Traffic Control	1	LS	$150,000	$150,000
3	Construction Staking	1	LS	$50,000	$50,000
4	Erosion Control & SWPPP	1	LS	$30,000	$30,000
5	Clearing & Grubbing	1	LS	$40,000	$40,000
6	Roadway Excavation	3,230	CY	$65	$209,950
7	Roadway/Walkway Demolition & Disposal	58,080	SF	$5	$290,400
8	AC Grinding	132,000	SF	$1	$132,000
9	Class II Aggregate Base	7,682	CY	$75	$576,150
10	PCC Curb (flush)	1,350	LF	$30	$40,500
11	PCC Sidewalk	6,750	SF	$12	$81,000
12	PCC Driveway	640	SF	$50	$32,000
13	Hot Mix Asphalt (Roadway)	4,107	TON	$120	$492,840
14	Hot Mix Asphalt (Separated Path)	376	TON	$120	$45,120
15	Swale Construction and Soil	4,800	SF	$5	$24,000
16	Swale Plants & Hydroseed	1	LS	$30,000	$30,000
17	Striping	1	LS	$40,000	$40,000
18	Road Signage	1	LS	$30,000	$30,000
				Construction Cost Subtotal:	$2,394,000
				Contingency (30%):	$719,000
				Construction Total:	**$3,113,000**
Professional Services Costs					
Environmental Studies & Permitting (5% Construction Fees)					$156,000
Plans, Specifications & Estimates (10% Construction Fees)					$312,000
Construction Services (CM, Admin, Testing) (10% Construction Fees)					$312,000
				Professional Services Cost Subtotal:	**$780,000**
				Contingency (30%):	**$230,000**
				Total Estimated Project Costs:	**$4,123,000**

3.5 Alternative Analysis

The alternatives above were conceived through a charrette process that involved members of the Bayside and neighboring communities. The alternatives had similar costs due to using the same materials and varying amounts slightly. Alternative One was the preferred alternative by the community because it kept most with the rural feel of the Bayside neighborhood. Though many liked the separated path at the Jacoby Creek School frontage, it would greatly reducing parking and would require difficulty when dropping off/picking up students occurred. At the Jacoby Creek Road intersection, the roundabout would be more effective at reducing vehicle speeds.

4 Environmental Status

Old Arcata Road has cultural and historic significance. A preliminary Cultural Resources Report was prepared by DZC that lists cultural sites that will need to be considered when completing the project. An initial study will be prepared once the preliminary engineering design is finalized. The project is anticipated to have a Mitigated Negative Declaration determination.

5 Additional Considerations

The following section describes additional considerations that need to be considered when planning for this project.

5.1 System Planning

The project is consistent with the Transportation Element of the City of Arcata General Plan. This includes adding striped bicycle lanes to arterial roads and increasing pedestrian facilities.

5.2 Construction Considerations

Some utility poles may require location. Utility companies will be contacted early in the project to initiate pole relocation per their Arcata franchise agreement.

No prolonged closures are anticipated during construction and construction flagging and traffic control will be used. One 5-foot wide paved shoulder in each direction will try to be provided for bicyclists during construction. Certain phases may require vehicles and bicyclists to share the traffic lane.

5.3 Hazardous and Waste Material

There are no hazardous materials to be encountered for any aspect of the project. AC grinding and aggregate base will be reused for the road base and will not require disposal of the current material. If removal is necessary, it will be removed from the project site and stockpiled at City facilities for future use.

5.4 Additional Agencies

City will coordinate work at the Jacoby Creek Road intersection with Humboldt County Public Works officials. Arcata will also coordinate with local emergency responders, law enforcement and school districts.

6 Potential Funding Sources

Potential funding for this project will be provided by the State of California's Active Transportation Program (ATP). ATP promotes projects that increase walking and biking, and would be the city's largest funding source. Other funding opportunities are potentially available through the State Transportation Improvement Program (STIP), public transportation funding, Safe Routes to School funding, and ADA accessibility funding.

7 Tentative Schedule

Below is a tentative schedule of project milestones. The project will begin at the beginning of 2018 and take three years to complete.

Start of Environmental Study	January 2018
Draft Environmental Study	July 2018

Final Environmental Study	October 2018
Begin Design Engineering	July 2018
Completion of Plans, Specifications, and Estimates	February 2019
Ready to Advertise	April 2019
Start Construction (Contract Award)	July 2020
Project Completion	December 2021

8 Project Support

Survey, design, and preparation of Final Plans, Specs & Estimate will be performed by City Engineering staff or contracted. City forces will perform environmental review, preliminary design and public meetings. Construction related testing will be performed by contracted consultant.

9 Report Preparation

This Project Report (PSR) has been prepared by the Arcata Engineering Department, and I hereby attest to its technical content.

Prepared By: _____
Marcela Jimenez, EIT
Engineering Aide

Date: 12/10/2017

Reviewed By: _____
Netra Khatri, PE
Assistant City Engineer

Date: 12/10/2017

10 References

Nichols Consulting Engineers (NCE) (2017). *City of Arcata Pavement Management Update (2016-17)-Final Report.* NCE Project Number 599.03.55.

SHN Engineers and Geologists (SHN), Redwood Community Action Agency (RCAA), Omni-Means Engineering Solution (OMES), Streamline Planning and Consultants (Streamline), and DZC Consulting (DZC). (2017). *Community Charrette for Design Success: Design Charrette and Preliminary Concept Designs Old Arcata Road Improvements Project.* City of Arcata.