

PROJECT STUDY REPORT EQUIVALENT

FOR THE

PARKWAY BOULEVARD RAILROAD **GRADE SEPARATION PROJECT**

City Project No. 2003.12

Prepared for:

CITY OF DIXON

NOVEMBER 10, 2006

Prepared by:

TY·LININTERNATIONAL

10365 Old Placerville Road, Suite 200
Sacramento, CA 95827
Phone (916) 366-6331 / Fax (916) 366-6536

City of Dixon Parkway Boulevard Railroad Grade Separation Project

PROJECT STUDY REPORT EQUIVALENT

1. Introduction

The City of Dixon is proposing to extend Parkway Boulevard from its current terminus at Valley Glen Drive west to Pitt School Road (Reference Attachment A for a Project Location Map). This extension would include a grade-separated crossing of the Union Pacific Railroad (UPRR) tracks and Porter Road and a new intersection with Pitt School Road. Pitt School Road would be improved from a two-lane facility with no shoulders to a two-lane facility with shoulders, extending from the City of Dixon (City)-Solano County (County) limit south past the proposed intersection with Parkway Boulevard to the existing intersection with Porter Road.

The purpose of this report is to present the project issues and to provide a discussion of the alignment and grade-separated structure alternatives considered for the project. This report will establish the viable project alternatives to be carried forward and define an environmental study corridor to be analyzed in the environmental document phase of the project.

The alignment and structure alternatives were developed through a combination of input from the Project Development Team (PDT) and an extensive public outreach process. The PDT created a list of primary objectives summarizing the need and purpose for the project. The design team developed six crossing alternatives (including one “no-project” alternative) based on the technical challenges presented at this project site. Public outreach meetings were conducted to receive the public’s input on the six alternatives. As a result of this outreach effort, six additional crossing alternatives were suggested by the public for consideration. Each alternative was evaluated based on its ability to satisfy the specific project goals, and alternatives not meeting those goals were eliminated from further consideration.

Two viable/preferred alignment alternatives for the Parkway Boulevard extension are carried through this Project Study Report Equivalent (PSRE), the Orange Alignment and the Green alignment. The Orange Alignment has an estimated total construction cost of \$10,500,000 (includes 25% contingency). The proposed Green Alignment is similar to the Orange Alignment in length, width, and type of work required for construction. As a result, the cost estimate of the Green Alignment is expected to be similar to the Orange alignment. The project is scheduled to begin construction in 2008 and to be completed in 2009. The environmental portion of the project is scheduled for completion by early-mid 2007. The required environmental document for the project will be an Environmental Impact Report/Environmental Assessment (EIR/EA).

The City of Dixon has identified two funding sources for the Parkway Boulevard project. The project improvements will be partially funded by the Federal Highway Administration (FHWA) through Federal Demonstration Funds. The majority of the funding will come from City of Dixon Traffic Impact Fees. This project is identified in the circulation element of the Dixon 1993 General Plan.

2. Background

PROJECT SETTING

The project setting consists of farmland and ranchland to the west of the UPRR tracks, with some structures (i.e., houses, barns, out-buildings, etc.) within close proximity to or within the project proposed right-of-way. Homes are under construction on lands to the north and east of the project site (i.e. within the Valley Glen Subdivision). A storm drainage pond is present immediately south of the project site. The portion of the project on the east side of the UPRR tracks is within the City of Dixon limits. The portion of the project site on the west side of the UPRR tracks, including Porter Road, lies within Solano County's limits (See Attachment 2).

CITY AND COUNTY TRANSPORTATION ISSUES

The proposed project lies within both the City and the County jurisdiction, as currently defined. The portion east of UPRR lies within the City's limits, and the portion west of UPRR lies with an unincorporated section of Solano County. However, this western portion of the project is identified as a "Potential Sphere of Influence Amendment Area" in the City's 2005 Municipal Service Review¹ (Reference Attachment A, Figure 2). Until the amendment should occur, the City and County will enter into a Joint Powers Agreement for this project.

The City of Dixon and Solano County rely heavily on road systems that have developed over time from farm roads into rural highways and local streets. With development in the project area, this regional system, which interconnects the core of each community, is being further expanded to serve the demands of today's suburban and urban communities.

The City of Dixon is being proactive in maintaining and protecting the rural atmosphere and friendly accessibility of the downtown area, and they are actively addressing the areas of growing development and their impacts on the community. Major developments on either side of the railroad tracks are planned within the City, most notably the Southwest Dixon Specific Plan and the Valley Glen subdivision. The new Dixon High School is currently under construction southeast of the Dixon May Fair Grounds.

The City of Dixon 1993 General Plan Circulation Element identifies Parkway Boulevard as a minor arterial running parallel to West A Street and Midway Road and connecting State Route (SR) 113 with Pitt School Road. In addition, the Draft Southwest Dixon Specific Plan (August 2002) identifies the extension of Parkway Boulevard to Pitt School Road with a grade separation at the UPRR tracks as a planned improvement necessary for traffic circulation.

EXISTING TRANSPORTATION FACILITIES

Parkway Boulevard, Pitt School Road, SR 113, Porter Road, West A Street, and the other streets surrounding the Parkway Boulevard project are important to local circulation within the City of Dixon as well as to the regional circulation of Solano County (as discussed in the County's Comprehensive Transportation Plan). A figure showing the existing transportation facilities within the project area is included in Attachment 2. The following major roadways currently provide circulation and access to the project vicinity (Fehr & Peers, 2006).

¹ The Sphere of Influence represents land currently in Solano County that the City of Dixon may consider annexing into the City at some future date.

PITT SCHOOL ROAD

Pitt School Road is currently a two- to four- lane north-south minor arterial roadway that extends from Interstate-80 (I-80) at the northern City limits south past Porter Road. North of West A Street, Pitt School Road has four lanes (two lanes in each direction) with posted speed limits of 25-35 mph serving residential and commercial land uses. South of West A Street, Pitt School Road has two lanes (one lane in each direction) and serves primarily agricultural and industrial land uses. This section of the roadway has a substandard roadway cross-section characterized by narrow lane widths, limited shoulders, and inconsistent striping.

PORTER ROAD

Porter Road is considered by Solano County as one of two routes located in the Dixon area that is of regional significance. Although defined as such, Porter Road consists only of a short two-lane north-south roadway, extending diagonally for approximately two miles between Midway Road and downtown Dixon. Within the project area, Porter Road traverses an unincorporated portion of the County, serving as a rural major collector with a maximum speed limit of 55 mph. From the southern City limits, Porter Road extends northeasterly into downtown Dixon, serving as a minor collector with a posted speed limit of 45 mph. Porter Road connects north-south and east-west streets through the project area, including Midway Road, Pitt School Road, South Lincoln Street, and West A Street. At the intersection with West A Street, Porter Road becomes North Adams Street and continues north to its terminus at North First Street (SR113). The street parallels the west side of the UPRR tracks, within a 65 ft wide right-of-way and acts as a utility corridor.

FIRST STREET/SR113

SR113 is a two- to four-lane north-south principal arterial roadway within the City of Dixon, as specified in the Dixon 1993 General Plan. It connects I-80 to State Route 12 in the southern portion of Solano County and acts as the main north-south street through downtown Dixon. Between I-80 and H Street, SR113 has four lanes (two lanes in each direction) and serves commercial, industrial, and residential land uses. South of H Street, SR113 has two travel lanes (one in each direction), and serves commercial, industrial, residential, and agricultural land uses. SR113 has posted speed limits of 25-45 mph.

WEST A STREET

West A Street is a two- to four-lane east-west minor arterial roadway that provides access to commercial and residential land uses. Within the City of Dixon, it extends from the western City limits at I-80 to the eastern City limits at Pedrick Road. West A Street has a four-lane cross-section between I-80 and North Lincoln Street and a two-lane cross-section from North Lincoln Street to Pedrick Road. West A Street has posted speed limits of 25-40 mph.

LINCOLN STREET

Lincoln Street is a two-lane north-south street that generally serves residential and agricultural land uses. North of Hillview Drive, Lincoln Street generally serves residential uses. South of Hillview Drive, it generally serves agricultural land uses and has a substandard roadway cross-section characterized by narrow lane widths, limited shoulders, and inconsistent striping.

UPRR

UPRR is a two track mainline facility between Sacramento and the Bay Area. It carries all major regional traffic between the areas, including Amtrak California. Train traffic is substantial along this facility. Average train speed is 79 mph and there are estimated 60 – 70 trains per day along this corridor, including 24 commuter trains. The UPRR tracks act as a barrier to traffic circulation through Dixon. Access across

the tracks exists at three at-grade crossing locations: Pitt School Rd, West A St, and First St (SR113). (See Attachment 2)

FUTURE AND CURRENT DEVELOPMENTS

Parkway Boulevard would connect the Valley Glen Subdivision, Brookfield Homes, and Dixon High School with the Southwest Dixon Specific Plan area in the southern portion of the City of Dixon and the northern unincorporated portion of Solano County. The project location map included in Attachment 2 shows the locations of these developments.

THE VALLEY GLEN SUBDIVISION

This subdivision is located south of the currently developed area of within the City of Dixon, adjacent to the cemetery, south of South Cherry Street, east of the UPRR tracks, west of First Street (SR113), and north of Parkway Boulevard. The Valley Glen Subdivision encompasses a total of 212 acres of mixed density residential and neighborhood commercial development, including over 800 residential units. The first residential phases are currently under construction, including a portion of Parkway Boulevard.

BROOKFIELD HOMES

This future 94-acre development will be located in an unincorporated portion of the County. However, the site is within the City's Sphere of Influence and is currently designated on the Dixon General Plan as "Future Residential-FR (After 2010)". Specifically, the development is located on the east side of SR-113, south and east of the existing County Faire subdivision, south of the new Dixon High School, north of the extension of Parkway Boulevard, and west of the future site of the City of Dixon's Retention Pond C. Brookfield Homes will be comprised of approximately 400 single family detached homes, ranging in size from 1,600 sf to 4,000 sf, and a 120-unit senior citizen complex. Home sales could begin in 2008 with grading and other site preparation activities preceding that event. (Jones & Stokes, Brookfield Project, Draft EIR, May-2005)

THE PROPOSED SOUTHWEST DIXON SPECIFIC PLAN

The Specific Plan Area is within the City's southern limits and is located east of I-80, south of West A Street, west of the UPRR tracks, and approximately 0.25 mile north of the proposed Parkway Boulevard alignment. The development included in the Plan would involve 445 acres of residential, highway commercial, business, and light industrial uses with over 1,200 residential units planned. The Southwest Dixon Specific Plan includes the development of multiple existing properties, including the following: Azevedo and Wayland Property (141 acres), Dixon Gateway-Bayside Property (120 acres), Garcia Property (20 acres), Lozano Property (three acres), Orchard Estates (36 acres), Schroeder Family Trust (56 acres), and Stil Property (69 acres). The draft environmental impact report (DEIR) for the project was completed in April, 2003.

As currently proposed, the Specific Plan and Brookfield Homes developments would consume the City of Dixon's allotted residential development through the year 2014, in accordance with Measure B's 3% growth restrictions.

In addition to the above major developments, a new Dixon High School is under construction east of the Valley Glen Subdivision on SR 113, southeast of the Dixon May Fair Grounds, and will replace the existing high school located on East A Street. The high school is scheduled to open in the fall of 2007.

In the City of Dixon 1993 General Plan, the construction of the Parkway Boulevard connection across UPRR is specified as mitigation for traffic generated with these developments and to provide a needed east west connection through southern Dixon.

PUBLIC OUTREACH

An extensive public outreach program is currently being undertaken for this project. To date, two public meetings have been held to elicit public input regarding the proposed project. The first public meeting was held at City of Dixon Council Chambers on November 10, 2004. A second public meeting was held at the City of Dixon Council Chambers on March 2, 2005. In addition to the public meetings, several one-on-one meetings were held with the individual project stakeholders between December of 2004 and January of 2005 to discuss their concerns. The agendas and meeting minutes from the public meetings, as well as the meeting notes from the one-on-one meetings, are included in Attachment 3.

Issues raised by the public/stakeholders include:

1. *Issue:* Some of the property owners affected by the project proposed an alignment (Orange Alignment), which they expressed preference for.
Outcome: This alignment will be carried forward as a feasible alignment alternative in the environmental process.
2. *Issue:* The public, particularly one property owner, was interested in the visual aspects of an overhead. Their concern was both from the standpoint of affecting their view and people being able to look down into their house.
Outcome: A visual study will be prepared to assess the visual impacts related to the project.
3. *Issue:* The same property owner expressed concern for their horses during construction. The main concern is the affect from noise and dust during construction, as well as the noise after construction.
Outcome: These affects will need to be considered during the environmental process. In addition, the City is considering hiring a horse respiratory specialist to assess the potential affects of dust on the horses.
4. *Issue:* Some residents expressed a preference for a tunnel in lieu of an overhead.
Outcome: The City requested that the design consultant prepare a more detailed investigation of the tunnel alternative. The tunnel Alternative Assessment is included in Attachment 8.

3. Need and Purpose

The proposed City of Dixon Parkway Boulevard Railroad Grade Separation Project is intended to meet the following primary objectives:

1. Improve local traffic circulation;
2. Relieve traffic congestion on West A Street;
3. Connect Parkway Boulevard with Pitt School Road, providing an east-west connection between the Southwest Dixon Specific Plan, the Valley Glen Development, and the future high school on SR 113;
4. Provide an east-west grade separated railroad crossing for emergency response vehicles;
5. Meet circulation goals set forth in the City of Dixon 1993 General Plan;
6. Minimize impacts to residential buildings;
7. Minimize impacts to agricultural and commercial functions of effected parcels; maximize use of remnant parcels;

8. Minimize impacts to railroad operations; and

The City of Dixon has proposed major developments adjacent to either side of the UPRR tracks, and the Dixon High School will be relocated southeast of the Dixon May Fair Grounds. The City of Dixon General Plan specified the construction of Parkway Boulevard in order to accommodate the resulting increase in vehicular and pedestrian traffic along the Pitt School Road and State Route 113 corridors due to this planned growth. The proposed arterial is necessary for efficient traffic circulation between the proposed developments.

TRAFFIC ANALYSIS

The Parkway Boulevard Railroad Grade Separation Project - Final Traffic Operations Report (September 29, 2006) developed by Fehr and Peers is included in Attachment 4.

EXISTING TRAFFIC OPERATIONAL CONDITIONS

The City of Dixon 1993 General Plan states that the City shall maintain a minimum acceptable level of service (LOS) of LOS C for existing and proposed street configurations. Traffic analyses were conducted and are documented in the Traffic Operations Report for the Parkway Boulevard Railroad Grade Separation Project (Fehr and Peers, September 2006). Based on the existing traffic movements, operations at the project study intersections are generally acceptable and do not currently demonstrate a need for a grade-separated roadway connection of Parkway Boulevard to Pitt School Road. However, the report indicated a need for the project to accommodate the anticipated traffic growth in the City associated with the planned development.

GENERAL PLAN TRAFFIC OPERATIONAL CONDITIONS

Traffic forecasts were developed for the construction year of 2007 and for the year 2025. The construction year of 2007 was selected to coincide with the planned project completion and with the opening of the new Dixon High School in the fall of 2007. The cumulative year of 2025 includes build-out of all reasonably foreseeable projects covered in the City's General Plan.

As discussed elsewhere in this report, several significant development projects are currently being planned and/or constructed in the City of Dixon. Various roadway improvements are associated with the planned projects, and these improvements were assumed to be in place in the traffic analyses. A detailed discussion of the planned development projects and proposed roadway improvements can be found in the Traffic Operations Report

Construction Year 2007

The Traffic Operations Report recommends construction of the Parkway Boulevard grade-separated roadway connection initially striped as only two travel lanes (one in each direction). At the intersection with Pitt School Road, stop-control shall be provided on the north-south approaches along Pitt School Road. Stop-control shall be provided for the westbound left-turn movement from Parkway Boulevard with yield control for the westbound right turn movement to Pitt School Road.

A traffic signal will be installed at the Parkway Boulevard/SR 113 intersection as part of the Brookfield Homes project and was assumed to be in place in the 2007 conditions.

Under the "No Project" conditions, all of the study intersections operate at acceptable levels of service (LOS C or better) with the exception of the West A Street/SR 113 intersection, which operates at LOS D during the PM peak. Under the 2007 "Plus Project" Conditions, travel patterns within the City will be

altered with approximately 20 to 30 percent of the daily traffic shifting from West A Street and SR 113 to Parkway Boulevard and Pitt School Road. All study intersection would operate at acceptable levels of service (LOS C or better). The project will improve operations at the West A Street/SR 113 intersection during the PM peak hour.

Cumulative Year 2025

For the Cumulative Year 2025, Parkway Boulevard shall be striped as a four-lane roadway (two travel lanes each direction). In addition, Pitt School Road should be widened to provide four travel lanes south of Hillview Drive, as recommended in the findings of the City of Dixon Street Master Plan Study (Fehr & Peers, September 2002). At the intersection of Pitt School Road and Parkway Boulevard, a traffic signal shall be installed. The intersection shall consist of one through lane and an exclusive right-turn lane on the northbound approach of Pitt School Rd; one through lane and two exclusive left-turn lanes with 250 ft of storage on the southbound approach of Pitt School Rd; and an exclusive left-turn lane and two exclusive right-turn lanes at the westbound approach of Parkway Boulevard. Improvements are also recommended at the intersection of Parkway Boulevard and SR 113, as described in the Traffic Operations Report.

Under the “No Project” conditions, the signalized intersections of West A Street/Pitt School Road and West A Street/SR 113 would operate unacceptably at LOS F in the Cumulative Year 2025. The proposed Parkway Boulevard project will improve delays at the study intersections due to the shift in traffic onto Pitt School Road and Parkway Boulevard from West A Street and SR 113.

4. Alignment Alternatives

ALTERNATIVES ANALYSIS

Each alternative proposed for the Parkway Boulevard alignment and railroad grade separation structure was analyzed for feasibility and checked against the goals of the project established by the project development team (PDT). The PDT consisted of members of the City of Dixon Engineering Department, members of Solano County Public Works Department, Caltrans, and the engineering design consultant. Alternatives not meeting the specified project goals were eliminated from further consideration. An Alternatives Evaluation Matrix comparing each alignment alternative with the specific goals of the project is included in Figure 1. The alignment alternatives are described in the following sections and included in Attachment 5.

ORIGINAL ALTERNATIVES

Six alternatives were originally developed for the extension of Parkway Boulevard from its terminus at Valley Glen Drive to Pitt School Road. The six alternatives included three alignments for a grade separated roadway connection, one alternative for a tunnel below the UPRR tracks on any alignment, one alternative for an at-grade crossing of the UPRR tracks on any alignment, and one no-project alternative. These alternatives are discussed in the following:

- **Yellow Alternative – Straight Alignment:** this alternative proposes extending existing Parkway Boulevard on a straight alignment over the railroad tracks to Pitt School Road. Parkway Boulevard would tie into Pitt School road with a 90-degree intersection.

Pros –

- Shortest alignment.

Cons –

- Significant direct impact to property owners (building demolition).
- Need to raise Pitt School Road – Parkway Boulevard intersection.
- Increased roadway costs due to raising Pitt School Road to tie-in to elevated intersection.
- Increased structure costs due to skewed configuration required at crossing with UPRR tracks.

This alternative was eliminated from further considerations, since it would cause significant impact to property owners by requiring the demolition of existing structures. This alternative did not meet the project goals.

- **Green Alternative – Reversing Curve Alignment:** this alternative proposes extending existing Parkway Boulevard over the railroad tracks on a reversing curve to the north to Pitt School Road. Parkway Boulevard would form a 90-degree intersection with Pitt School Road.

Pros –

- Meets project goals
- No direct impacts to residential buildings
- Permanent impacts limited to single parcel (APN 114-031-04).
- Short structure length, no skew necessary at UPRR tracks.

Cons –

- Impacts to two parcels – The impacted parcel is severed by Parkway Blvd, creating two remainder parcels with no access between the remnants (all existing structures are located on the western remnant).

This alternative will be carried forward in the analysis and will be discussed in the project environmental document as a feasible alternative. This alternative meets the project goals. Horizontal and vertical layouts were developed for the Green Alternative (see Attachment 6).

- **Blue Alternative – Sweeping Curve Alignment:** this alternative proposes extending existing Parkway Boulevard over the railroad tracks on a sweeping curve to the north to Pitt School Road. Parkway Boulevard would result in merging connections to Pitt School Road with the northbound and southbound movements separated.

Pros –

- Provides smooth transition to northbound Pitt School Rd.
- Short structure length, no skew necessary at UPRR tracks.

Cons –

- Significant direct impact to property owners (building demolition).
- Needs a separate tie-in to Pitt School Road for southbound traffic.
- Impacts at least three parcels (the most of the original alternatives) - The three impacted parcels are severed by Parkway Blvd, creating remainder parcels with no access between the remnants (the existing structures are located on the western remnants of two parcels and on the eastern remnant of one parcel).

This alternative was eliminated from further considerations, since it would cause significant impact to property owners by requiring the demolition of existing houses. This alternative did not meet the project goals.

- **Tunnel Alternative** – The tunnel alternative can be paired with any of the above mentioned alignment alternatives. The tunnel alternative proposes constructing a tunnel beneath the UPRR tracks in lieu of an overhead structure.

Pros –

- Least visual impacts.

Cons –

- Most expensive alternative.
- Requires a temporary railroad structure and/or specialized jacking techniques to construct the tunnel under the existing tracks.
- Requires a pumping plant to drain the tunnel, leading to future maintenance costs.
- The tunnel alternative is expected to have greater adverse impacts to biological, cultural, and water quality, as discussed in the Tunnel Alternative Assessment in Attachment 8.
- The FHWA typically will not accept a project (i.e. allow federal funds to be expended on a project) that has the potential to increase hazardous waste or groundwater contamination. The continuous groundwater pumping that would be required during operation of the tunnel may cause the groundwater to percolate through contaminated soils typically associated with railroads.

A further discussion of the tunnel alternative is included as Attachment 8 in this report.

- **At-Grade UPRR Crossing Alternative** – The at-grade crossing alternative can be paired with any of the above mentioned alignment alternatives. The alternative proposes to construct an at-grade crossing with the UPRR tracks in lieu of an overhead structure or a tunnel. Union Pacific Railroad and the Public Utilities Commission stated that an additional at-grade RR crossing in the City of Dixon would not be approved, and this alternative was eliminated from further consideration. This alternative does not meet the goals of the project.
- **No Build Alternative** – This alternative will not fulfill the purpose and need of this project and does not meet any of the project goals.

PUBLIC GENERATED ALTERNATIVES

In addition to the original alternatives developed for the project, six alternatives were suggested at the public meeting on November 10, 2004. These alignment alternatives are described in the following:

- **Public Alternative 1** – Parkway Boulevard to Porter Street Alignment. Extend Parkway Boulevard (with overhead structure at RR tracks) to Porter Road instead of Pitt School Road.

Pros –

- Alternative results in direct impact to only one property owner.

Cons –

- Not consistent with the City of Dixon General.
- Will require Porter Road to be raised near the RR tracks requiring construction of significant and costly retaining walls.
- A longer curved structure on a tight radius will be required for the overhead structure. The tight radius will reduce the allowable design speed of the facility.
- Does not provide for an East-West link.

- The proposed alignment would impact an apartment complex and planned housing.

- **Public Alternative 2** – Parkway Boulevard to South Lincoln Street Alignment. Extend Parkway Boulevard (with overhead structure at RR tracks) to South Lincoln Street instead of Pitt School Road.

Pros –

- Potentially minimizes property takes.

Cons –

- Not consistent with the City of Dixon General.
- Will require South Lincoln Street to be raised near the RR tracks requiring construction of significant and costly retaining walls and residential access issues.
- Does not provide for an East-West link.
- The proposed alignment would impact an apartment complex and planned housing.
- South Lincoln Street has been identified as a residential collector in the General Plan Circulation map. Parkway Boulevard is an arterial.

- **Public Alternative 3** – Extend Parkway Boulevard alignment to George Lane/Evans Road. This alternative alignment follows the Yellow Alternative or straight alignment (with an overhead structure at the RR tracks). This alternative proposed to extend Parkway Boulevard west of Pitt School Road to Evans Road.

Pros –

- Similar to the Yellow alignment alternative, this alternative allows for a possible future extension of Parkway Blvd to George Lane/Evans Road. Currently there is no plan to extend Parkway Blvd to the west in the City’s General Plan.

Cons –

- Similar to the Yellow alignment alternative.
- Not consistent with the City of Dixon General Plan.
- Alignment extends outside the City’s “sphere of influence”.

- **Public Alternative 4** – Construct an overhead structure at the railroad crossing near the current at-grade crossing at Pitt School Road and Porter Road. This alternative will eliminate the existing at-grade crossing at Pitt School Road. The proposed alignment for Parkway Boulevard would extend south of the existing Retention Pond A and tie into Pitt School Road north of the Pitt School Road/Porter Road intersection.

Pros –

- Eliminates the existing at-grade crossing at Pitt School Road and the UPRR tracks.

Cons –

- Parkway Blvd alignment is outside of the City’s “sphere of influence”.
- The proposed alignment will have adverse impacts to the retention pond capacity and will impede future pond expansion.
- The alignment will impact planned recreational and wildlife land uses at the retention pond.
- Alignment provides a more circuitous route for Parkway Boulevard traffic.

- **Public Alternative 5** – Construct an overhead structure at the railroad crossing near the current at-grade crossing at Pitt School Road and Porter Road. This alternative will eliminate the existing at-

grade crossing at Pitt School Road. The proposed alignment for Parkway Boulevard would extend south of the existing Retention Pond A and tie into Pitt School Road south of the Pitt School Road/Porter Road intersection.

Pros –

- Eliminates the existing at-grade crossing at Pitt School Road and the UPRR tracks.

Cons –

- Parkway Blvd alignment is outside of the City’s “sphere of influence”.
 - The proposed alignment will have adverse impacts to the retention pond capacity and will impede future pond expansion.
 - The alignment will impact planned recreational and wildlife land uses at the retention pond.
 - Alignment provides a more circuitous route for Parkway Boulevard traffic.
- **Public Alternative 6** – Combine Public Alternative 2 and Public Alternative 5. Parkway Boulevard will split into two separate one-way roadways (2 lanes on each). The northbound roadway would follow the alignment proposed in Public Alternative 2 with Parkway Boulevard joining South Lincoln Road. The southbound roadway would follow the alignment proposed in Public Alternative 5. This alignment would construct an overhead structure at the RR track near the intersection South Lincoln Street and Porter Road and near the current at-grade crossing at Pitt School Road and Porter Road. This alternative will eliminate the existing at-grade crossing at Pitt School Road. The proposed southbound alignment for Parkway Boulevard would extend south of the existing Retention Pond A and tie into Pitt School Road south of the Pitt School Road/Porter Road intersection.

Pros –

- Eliminates the existing at-grade crossing at Pitt School Road and the UPRR tracks.

Cons –

- Parkway Blvd alignment is outside of the City’s “sphere of influence”.
- Require construction of two overhead structures.
- The proposed northbound alignment will have adverse impacts to the retention pond capacity and will impede future pond expansion. The alignment will also impact planned recreational and wildlife land uses at the retention pond.
- Alignment provides a more circuitous route for Parkway Boulevard traffic.

The above six alternatives were brought forth at the public meeting for consideration. *The alternatives neither met the “purpose and need” of the project nor satisfied the project goals specified and were dropped from further analysis.* However, ideas generated by the public’s input were incorporated into the feasible alternatives that will be carried forward and analyzed in further detail in the environmental document.

The following additional alignment alternative was developed from input received during several stakeholder meetings:

- **Orange Alternative (Public Alternative-7)** – North Reversing Curve Alignment: this alternative proposes extending existing Parkway Boulevard over the railroad tracks on a reversing curve to the north to Pitt School Road. Parkway Boulevard would form a 90 degree intersection with Pitt School Road. The Orange Alternative will tie into Pitt School Road north of the proposed Green Alternative.

Pros –

- Meets project goals
- No direct impacts to residential buildings
- Shorter structure length, minimal skew necessary at UPRR tracks.
- This alignment alternative received the most support from the property owners directly impacted by the extension of Parkway Boulevard.

Cons –

- Impacts to three parcels - Two impacted parcels are severed by Parkway Blvd, creating remainder parcels with no access between the remnants (all existing structures are located on the western remnants).

This alternative will be carried forward in the analysis and will be discussed in the project environmental document as a feasible alternative. This alternative meets the project goals. Horizontal and vertical layouts were developed for the Orange Alternative, see Attachment 6.

Figure 1 - ALTERNATIVES EVALUATION TABLE

PROJECT GOALS	CROSSING ALTERNATIVES											
	Yellow	Green	Blue	Orange (Public-7)	Tunnel	At-Grade	Public-1	Public-2	Public-3	Public-4	Public-5	Public-6
1 Improve local traffic circulation	+	+	+	+	+	+	+	+	+	+	+	+
2 Meet circulation goals set forth in the City of Dixon-1993 General Plan	+	+	+	+	+	-	-	-	-	-	-	-
3 Relieve traffic congestion on West A Street	+	+	+	+	+	+	-	-	+	+	+	+
4 Connect Parkway Boulevard with Pitt School Road, providing an East-West connection between the SW Specific Plan, the Valley Glen Development, & the future high school on SR-113	+	+	+	+	+	+	-	-	-	+	-	-
5 Provide an East-West grade separated railroad crossing for emergency response vehicles	+	+	+	+	+	-	+	+	+	+	+	+
6 Minimize impacts to residential buildings	-	+	-	+	-	-	-	-	-	+	+	-
7 Minimize impacts to agricultural and commercial functions of affected parcels; maximize use of remnant parcels	+	+	-	+	+	+	-	-	-	-	-	+
8 Minimize impacts to railroad operations	+	+	+	+	-	-	+	+	+	+	+	+

Legend:

- + = Meets project goal
- = Does not meet project goal

PREFERRED ALTERNATIVES

PARKWAY BOULEVARD

Existing Parkway Boulevard is a two-lane facility that extends from SR 113 to Valley Glen Drive. There are Class II bicycle lanes in both directions and it has a posted speed of 35 mph. Roadway improvements associated with the Parkway Boulevard Railroad Grade Separation Project will include the construction of a 92 ft wide minor arterial (from back of walk to back of walk) from Valley Glen Road to Pitt School Road. The roadway will consist of four through-lanes with a center turn lane/median. The two outer travel lanes will be 12 ft wide, and the two inner travel lanes (adjacent to the median) will be 13 ft wide. The center turn lane/median will be 16 ft wide. At the structure, the center median will narrow to 4 ft, corresponding to an 80 ft wide roadway (from back of walk to back of walk). Shoulders/bike lanes and sidewalks, 7 ft and 6 ft wide respectively, will be included on each side of the road. The roadway will be grade-separated over the UPRR and Porter Road to provide unrestricted traffic flow between South First Street (i.e., SR 113) and Pitt School Road. Parkway Boulevard will have a design speed of 45 mph with an anticipated posted speed limit of 35 mph.

Parkway Blvd is proposed as a four-lane arterial street. The traffic analysis for the project showed that only two travel lanes (one in each direction) are necessary to provide acceptable traffic operations under Construction Year 2007. However, Parkway Blvd will require a four-lane grade separation for the Cumulative Year 2025. Under both 2007 and 2025 conditions, Parkway Blvd will be constructed to its ultimate width and striped to the two lane facility required during the interim year. Parkway Blvd would be re-striped to provide the full four lane arterial street with the installation of improvements by the Southwest Dixon Specific Plan (SWDSP) developments.

PITT SCHOOL ROAD

Pitt School Road is planned for improvement as part of the SWDSP. To accommodate future vehicle and pedestrian traffic for the SWDSP Cumulative Year 2025, Pitt School Road will be widened by development to consist of four travel lanes (two in each direction), median, sidewalks, and Class II on-street bike lanes. The widening will extend from the intersection with Hillview Drive within the City south to the City-County limits. In addition, it is recommended that the portion of Pitt School Road extending from the City-County limits south to the intersection with Parkway Boulevard be widened to include four travel lanes with Class II bike lanes and sidewalks (Fehr & Peers, 2006). These ultimate widening improvements to Pitt School Road are not included as part of this project.

For this project, Pitt School Road will be improved to conform to the traffic needs for the Construction Year 2007 and Solano County standards. The road will be reconstructed from the existing two-8.5 ft lanes with no shoulders to two-12 ft lanes with 4 ft Class II bike lanes and 4 ft earthen shoulders. These improvements will extend from the City-County limits south through the proposed intersection with Parkway Boulevard to the existing intersection with Porter Road.

PARKWAY BOULEVARD / PITT SCHOOL ROAD INTERSECTION

To accommodate the SWDSP Cumulative Year 2025 conditions, 4-lanes on Parkway Blvd (2 in each direction) and a signalized intersection with Pitt School Road will be required. The northbound approach of Pitt School Road will require one through lane and one exclusive right-turn lane. The southbound approach of Pitt School Road will require one through lane and two exclusive left-turn lanes with 250 ft of vehicle storage. Westbound Parkway Blvd will require one exclusive left-turn lane and two exclusive right-turn lanes. Parkway Blvd would be re-striped in the ultimate phase to provide an exclusive left-turn lane and two exclusive right turn lanes at the westbound approach to the intersection. These

improvements are also planned as part of the SWDSP and not proposed as part of the Parkway Blvd project.

Under Construction Year 2007 conditions, an unsignalized traffic control at the Parkway Blvd/Pitt School Road intersection will serve as the interim facility. According to the Traffic Report, this is adequate to provide acceptable traffic operations (LOS A during both peak hours). Stop control would be provided on the north and south approaches on Pitt School Road. No turning lanes are required. Stop control would also be provided for the Parkway Blvd westbound left-turn movement, and yield control for the westbound right-turn movement. (Reference Sheet L1 in Attachment 6).

GREEN ALTERNATIVE

The Green Alternative (Reference Sheet L2 in Attachment 6) is a reversing curvature alignment that realigns Parkway Boulevard approximately 600 ft north but maintains the east-west arterial pattern. This alternative will impact at least two parcels other than the Valley Glen Development. This alternative minimizes impacts to residential buildings on the impacted parcels. The UPRR overcrossing will be perpendicular to the tracks, thereby minimizing the required span lengths and the overall bridge length. The separation distance between Pitt School Road and the UPRR tracks is adequate for the vertical alignment design of Parkway Blvd to tie into the Pitt School Road intersection at existing grades.

The alternative will include the 80-foot wide (from back of walk to back of walk) bridge structure described above, along with the limits of the road embankment (toe of fill or soil). The alternative will also include a proposed 30-ft utility corridor adjacent to the toe of fill on the south side. The utility corridor may contain a 21-inch sewer line and a 66 - to 78-inch storm drain.

ORANGE ALTERNATIVE

The Orange Alternative (Reference Sheet L3 in Attachment 6) is a reversing curvature alignment that realigns Parkway Boulevard approximately 1000 ft north but maintains the east-west arterial pattern. This alternative will impact at least three property owners, other than the Valley Glen Development. As with the Green Alternative, this alternative will avoid existing residential structures on the impacted parcels. With the increased alignment shift to the north, the alignment is slightly longer than the Green Alternative. Also, with a slight skew of the crossing over the UPRR right of way, the bridge structure span lengths will be slightly longer than those for the Green Alternative. The separation distance between Pitt School Road and the UPRR tracks is adequate for the vertical alignment design of Parkway Blvd to tie into the Pitt School Road intersection at existing grades.

The alternative will include the 80-foot wide (from back of walk to back of walk) bridge structure described above, along with the limits of the road embankment (toe of fill or soil). The alternative will also include a proposed 30-ft utility corridor adjacent to the toe of fill on the south side. The utility corridor may contain a 21-inch sewer line and a 66 - to 78-inch storm drain.

RIGHT-OF-WAY REQUIREMENTS

The project area involves multiple parcels that are located both within the City of Dixon and Solano County. The following is a listing of the parcels:

Assessors Parcel Number (APN)	Description
109-130-01	Residence - Agricultural
109-130-11	City of Dixon-Pond A
114-031-02	Residence - Agricultural
114-031-03	Residence - Agricultural
114-031-04	Residence - Agricultural
114-031-06	Residence - Agricultural
114-033-01	Union Pacific Railroad
114-033-14	Valley Glen Subdivision

The construction of Parkway Blvd and reconstruction of Pitt School Road will require the acquisition of right of way, specifically along the Parkway Blvd corridor, for the project. Depending upon the alternative chosen, right-of-way acquisition would be required from as many as three parcels, with additional aerial and utility corridor easements across the UPRR right of way.

The Green and Orange alternatives are very similar with respect to the right of way requirements. The 2600 ft long roadway proposed in the Green Alignment Alternative will require a right-of-way corridor which varies in width from 48 ft to 145 ft. Similarly, the 2750 ft long roadway proposed in the Orange Alignment Alternative will require a right-of-corridor varying in width from 48 ft to 141 ft. Both right of way corridors include a 30 ft utility corridor south of the proposed alignment to accommodate the proposed Master Plan storm drainage and sanitary sewer facilities for the SWDSP.

Temporary construction easements will be required along the east side of Pitt School Road from the City of Dixon city limit line to Porter Road.

The following table lists the right-of-way takes required from each parcel for both preferred alternatives:

APN	R/W Take Orange Alignment Alternative	R/W Take Green Alignment Alternative	Permanent Easement (Both Alts)	Description
114-031-02	1.1 acres	-	-	Property take
114-031-03	2.6 acres	-	-	Property take
114-031-04	1.9 acres	4.8 acres	-	Property take
114-033-01	-	-	0.1 acres	UPRR pipeline ease.
114-033-01	-	-	0.3 acres	UPRR aerial ease.

UTILITIES

This project will require coordination with local utility companies, several national communications companies and the Union Pacific Railroad Company.

EXISTING UTILITIES

Several existing utilities are present within the project limits. These include the following:

Utility Co	Facility Type
PG&E	60KV overhead power line
PG&E	12KV overhead power line
SBC (Pacific Bell)	Underground and overhead distribution lines
Kinder Morgan	14-inch volatile fuel line
Qwest Communications	Fiber Optic Communications lines
MCI	Fiber Optic Communications lines
Level Three Communications	Fiber Optic Communications lines
WilTel Communications	Fiber Optic Communications lines

The majority of these utilities are located within the UPRR right of way to the east and west of the existing tracks and within the City/County rights of way to the east and west of Porter Road.

The existing PG&E overhead electrical lines run along both sides of Porter Road. The overhead line on the west side is a 60 KV line, and the line on the east is a 12 KV line. Both overhead lines would be impacted by the proposed bridge crossing Porter Road and will need to be relocated. At this stage of the project, it appears as though the 60 KV line will need to be relocated with new poles installed along the proposed alignment of Parkway Blvd. The 60Kv will run along Parkway Boulevard, cross over and come back down the south side joining back in at Porter Road. The 12 KV line on the east side of Porter Road can either use the same poles as the 60Kv line or may be undergrounded to cross beneath the proposed structure.

SBC (Pacific Bell) underground telephone lines also run parallel to Porter Road on both the east and west side within the City/County rights of way. These lines are to be relocated in a localized area for the purposes of bridge footing construction. They will remain in their current locations otherwise.

The existing utilities located within the UPRR right of way include the following: a 14-inch steel pipe Kinder Morgan volatile fuel line on the west side of the tracks; Qwest Communications, MCI, and Level 3 Communications underground lines located west of the tracks; and a WilTel Communications line located east of the tracks. These utilities will be protected in place from construction operations.

MASTER PLAN UTILITIES

According to the SWDSP, development will require the installation of several master plan utility facilities to support the development proposed and to construct the City's "backbone" infrastructure in the area. These facilities include a 21 to 24-inch Sanitary Sewer line, a 66 to 72-inch Storm Drain line, and a 14-inch Water line. The following master plan documents have been prepared for the City by the SWDSP

- Draft Southwest Dixon Specific Plan Area
- Water Master Plan Report (Nolte, August 2002)

- Dixon Solano Municipal Water Service Master Plan (Solano Irrigation District, 2000)
- Draft Southwest Dixon Specific Area Sewer Master Plan

The lines proposed by these documents have historically have been planned to follow South Lincoln Road and Porter Rd where they would intersect the project. The utilities would then follow the project east across UPRR to connect with the Valley Glen Subdivision infrastructure and the City's Retention Pond A. The portions of the master planned utilities that are within the project limits will be constructed as part of this project.

Water

The City is proposing to run a new 12- to 14-inch water main southerly along South Lincoln Road, continuing south at the junction with Porter Road, and then run easterly along the south side of the proposed Parkway Blvd alignment within a proposed 30 ft easement. The proposed line will cross the UPRR track and connect to the 12-inch water main installed as part of the Valley Glen development.

Sanitary Sewer

The City is proposing to run the new 27-inch sewer line southerly along South Lincoln Road, continuing south at the junction with Porter Road, and then run easterly along the south side of the proposed Parkway Blvd alignment within a proposed 30 ft easement. The proposed sewer line would cross under the UPRR tracks to connect to the existing 27-inch sewer line installed as part of the Valley Glen development. This line will require boring and jacking construction methods to pass under the UPRR right of way without interruption of the rail traffic. A pipeline crossing agreement and a utility easement will be required from UPRR.

Storm Drain

The Parkway Blvd extension project is located to the east of the Dixon Ridge and drains to the east to the Union Pacific Railroad R/W. The Parkway Blvd Grade Separation project drains primarily to the south. The land in the project area is flat to mildly sloping terrain. It appears that shallow flooding may occur in the area of Porter Road and South Lincoln Street during large runoff events due to surface releases accumulating from areas upstream. Existing drainage features within the project area consists mainly of roadside ditches that carry the runoff from East of Pitt School Road, south to Porter Road. A drainage ditch located between Porter Road and the UPRR tracks, running parallel to the tracks, collects runoff that drains to Porter Road from the north. This water is then passed through the UPRR right of way outside the project limits.

There is an existing 84-inch storm drain line that is within the Pitt School Road right of way. This storm drain is carrying runoff from outside the project limits to the City's Retention Pond A. It follows Pitt School Road to location of the Yellow Alternative Alignment, where it turns east to the Pond. According to the City, there is no additional capacity in the 84-inch line.

As part of the drainage infrastructure proposed to support the SWDSP area, a new outfall storm drain line will deliver a portion of the runoff collected from the area east of the Dixon Ridge and inside the SWDSP area to Retention Pond A. The City is proposing to run the new 78-inch storm drain line southerly along South Lincoln Road, continuing south at the junction with Porter Road, and then run easterly along the south side of the proposed Parkway Blvd alignment within a proposed 30 ft easement. The proposed storm drain line would cross under the UPRR track adjacent to the sewer main (north of the existing 84 inch storm drain) and outfall into Retention Pond A. This line will require boring and jacking

construction methods to pass under the UPRR right of way without interruption of the rail traffic. A pipeline crossing agreement and a utility easement will be required from UPRR

5. System Planning and Regional Planning

CITY-COUNTY COORDINATION

As discussed previously, the City and the County are working on a Joint Powers agreement. This agreement will outline the responsibilities and understanding on the various issues associated with the project.

Because the project lies both within the City and the County, zoning issues need to be considered. Within the City, the land has urban zoning. The County has zoned the project area as A40 (agricultural, 40 acre min) to maintain “farmable” parcels, i.e., parcels with row cropping potential. However, the three parcels directly affected by the project do not currently comply with the A40 zoning. Since the affected County parcels are currently not consistent with existing County zoning requirements, this project should try to avoid making the parcels less consistent. Therefore, the alternatives should consider maximizing parcel sizes.

AGENCY COORDINATION

The City of Dixon will be working closely with the individuals and agencies listed below throughout the project development process and into construction. The proposed construction of the Parkway Boulevard extension and grade separation will require coordination with the following entities:

1. Solano County
2. Caltrans
3. Federal Highway Administration
4. Union Pacific Rail Road
5. Public Utilities Commission
6. Regional Water Quality Control Board
7. United States Fish and Wildlife Service
8. California Department of Fish and Game
9. Affected property owners
10. Affected utility companies

6. Structure Advance Planning Study

The new structure will grade separate Parkway Boulevard at two existing Union Pacific railroad tracks and existing Porter Road, providing a grade separated East-West corridor. The structure is 82’ wide in order to accommodate 1’ barriers, 6’ sidewalks, 7’ bike lanes, 12’ and 13’ traffic lanes, and a 4’ raised median. The overall length of the structure is a function of horizontal and vertical clearance limitations, depth to span ratios, balancing of span lengths, and avoiding obstructions due to adjacent land uses.

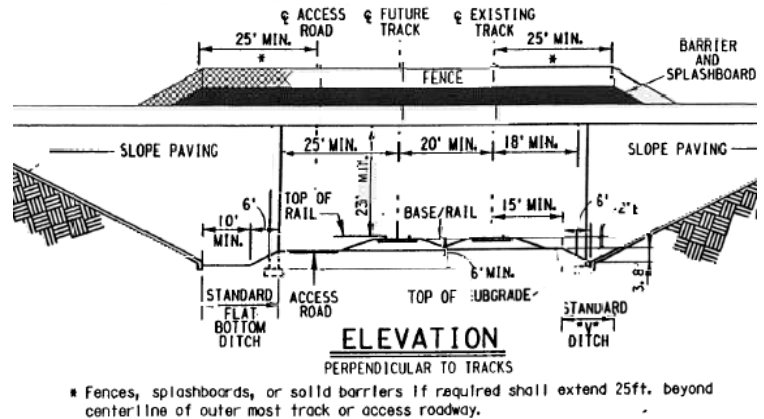
STRUCTURE CONSIDERATIONS

During the initial investigations into suitable structure types and span configurations, several factors were identified as key elements that impacted the overall structure cost and influenced the planning of the new grade separation structure. These key elements include the following:

1. Union Pacific Railroad (UPRR) Design Considerations

Within the UPRR Right of Way (R/W), there are two existing mainline tracks providing both heavy rail and passenger service. This service cannot be interrupted. There are also several design standards required by UPRR:

Horizontal Constraints: UPRR has requested that the structure layout accommodate a future third track and maintenance access roads on either side of the existing dual tracks. The layout of the future tracks will conform to UPRR guidelines of centerline-to-centerline spacing of 20'.



UPRR Clearances for Overpasses

In addition, placement of the structure supports (columns, footings, etc...) and falsework bents shall comply with UPRR standards with respect to permanent and temporary construction clearances. Accounting for the future expansion, the three-track configuration at ultimate build-out results in a minimum 25' clearance from the centerline of the existing or future track to the face of the structure supports (columns). A minimum temporary clearance of 12' from the centerline to any falsework part is required during construction.

Vertical Constraints: The profile grade will be set to provide the minimum vertical clearance of 23' from the top of the existing or future rail to the bottom of the overcrossing deck (soffit). A minimum temporary clearance of 21' from the top of rail to any falsework part is required during construction.

Slope Constraints: Approach fill slopes (i.e., abutment end slopes) within the UPRR R/W will be graded at less than 2H:1V. If slopes are placed at 2H:1V or greater, slopes shall be paved.

Based on discussions with UPRR and their potential opposition to the project (See "Railroad Coordination" section), it is recommended to span the UPRR right of way. This will not only minimize construction impacts to UPRR, but will also avoid the numerous underground utilities within the UPRR corridor.

2. Foundation Considerations

Due to the strict horizontal clearance constraints at the bents, the use of large diameter cast-in-drilled-hole pile shafts is favorable over conventional footing-type foundations.

3. Porter Road Design Considerations

The new structure will span the existing 65' wide public right-of-way, which is currently jointly shared by the City of Dixon and Solano County. Within this R/W, existing Porter Road provides local access between the City and the County. Improvements to Porter Road are not currently planned. The existing road features a 24'± wide paved surface, including shoulders. The new structure will be the sole responsibility of the City. The County will enter into a joint powers agreement, grant an easement, or issue an encroachment permit for the use of the

County right of way.

Horizontal Constraints: For the future traffic volume and traffic type anticipated on Porter Road, a minimum horizontal clear zone distance of 7' (AASHTO standard) will be provided from edge of traveled way of Porter Road to any non-traversable (permanent) obstruction. A minimum temporary clearance of 4' from traveled way to any falsework part (protected by K-rail) is required during construction.

Vertical Constraints: The profile grade will be set to provide the minimum vertical clearance of 15' (Caltrans Bridge Design Specifications) from Porter Road to the bottom of the overcrossing deck (soffit) or falsework for the permanent clearance and the temporary construction conditions.

4. Existing Utilities

Based on the facility plans provided in response to initial inquiries and information recorded during site visits, there are numerous existing utilities located overhead and underground within the City/County R/W and the UPRR R/W. Although the exact location of the underground utilities has not yet been determined, the placement of the structure supports (bents and foundations) will seek to minimize conflicts with the existing utilities. A clear distance of 5' will be provided from the face of any substructure elements to the anticipated location of a utility. The exact location of utilities that are potentially in conflict with the structure supports will be determined by potholing. When considering foundation locations, impacts to the electrical and telephone lines were viewed as less critical than impacts to the petroleum/fuel and fiber optic lines.

Utilities West of Porter Road: Existing utilities include overhead high voltage (60kV) electrical lines and underground telephone lines running parallel to Porter Road within the County R/W.

Impact on Structure Design: These utilities did not influence the placement of the structure foundation (the 60kV line will be relocated as a result of conflicts with the bridge superstructure).

Utilities from Porter Road to UPRR Tracks: Existing utilities include overhead high voltage (12kV) electrical lines and underground telephone lines running parallel to Porter Road within the City R/W; and an underground petroleum/fuel line and three sets of underground fiber optics lines running parallel to the UPRR tracks within the UPRR R/W.

Impact on Structure Design: As shown in Attachment 9 "Limitations on Substructure Placement", the placement of the structure foundations is severely limited by the UPRR constraints and the numerous utilities present. Due to the high cost of relocating the fiber optic lines and high volatile fuel line, the structure foundations were placed to avoid impacting these lines.

Utilities East of UPRR Tracks: Existing utilities include underground fiber optic lines running parallel to the UPRR tracks within the UPRR R/W.

Impact on Structure Design: The underground fiber optic line is located approximately 10' from the right of way line within the UPRR right of way. To avoid impacting this line and

to allow for future UPRR track expansion, the abutment foundation was placed outside the railroad right of way.

5. Adjacent Land Use

The west structure approach (Parkway Boulevard roadway from Pitt School Road to the UPRR tracks) will segment several privately owned parcels. The property owners have requested that the City consider constructing a bridge that would allow for a potential road beneath the structure (on the West side of Porter Road) to accommodate future north-south access between the segmented parcels.

Three alternatives were considered for providing this access:

- a. Provide No Access
- b. Provide Bike Path Only: A Type 1 bike path running in front of the west abutment, parallel to Porter Road, will provide future north-south access between the segmented parcels. The path would have a 2' shoulder between the paved path surface and the toe of fill (or the face of an earth retaining structure, if required), an 8' paved section, and a 5' separation between the edge of pavement of Porter Road and the paved path surface.
- c. Provide for a full Road Section: A full road section in front of the west abutment, parallel to Porter Road, will provide future north-south access between the segmented parcels. The road will feature a 6' shoulder, two 10' lanes, a 4' shoulder, a safety shape to separate opposing directions of traffic on the new road and existing Porter Road, and a 4' shoulder on Porter Road.

STRUCTURE TYPE SELECTION

Various structure type/span configuration alternatives were developed which included one, two, and three span options. The initial alternatives attempted to satisfy all the criteria listed in the above Items 1-5. The placement of substructure elements was limited to (1) the area west of the Porter Road, (2) the area east of Porter Road and west of the UPRR R/W, and (3) the area east of the UPRR R/W (see Attachment 9).

Several structure type alternatives were considered for use at this project site, including:

- Cast-in-place/Reinforced Concrete (CIP/RC) Box Girder
- Cast-in-place/Prestressed (CIP/PS) Box Girder
- Precast/Prestressed Concrete (PC/PS) T- or Double T-Beam with Topping Slab
- Precast/Prestressed (PC/PS) Standard I-Girder
- Precast/Prestressed (PC/PS) Bulb T-Girder
- Structural Steel I-Girder

An initial screening process was conducted to evaluate the general feasibility of each structure type considering feasible span lengths, structure depth, impact upon profile grade, and methods of construction. The table below is the structure comparison matrix developed as part of the screening process. It identifies the cast-in-place/prestress concrete box girder as the most suitable structure type for further investigation (indicated in **bold**).

STRUCTURE COMPARISON MATRIX						
Structure Type	Recommended Span Range ⁽¹⁾	Cost Range Per Sq Ft	Additional Topping Slab Req'd	Structure Depth and PG Elevation ⁽²⁾	Curved Horizontal Alignment	Falsework Required
CIP/RC Box Girder	50' - 120'	\$100-\$180	0"	7.15' Elev 94.15±	Standard construction	Yes
CIP/PS Box Girder	100' - 250'	\$100-\$180	0"	5.20' Elev 92.20±	Standard construction	Yes
PC/PS T- or TT-Beam	30' - 120'	\$100-\$200	5" AC + Build-up ⁽³⁾	7.57' Elev 94.57±	Specialized forms or overbuild width	No
PC/PS Standard I-Girder	50' - 120'	\$100-\$200	Build-up	6.50' Elev 93.50±	Specialized forms or overbuild width	No
PC/PS Bulb-T Girder	90' - 145'	\$100-\$200	Build-up	5.85' Elev 92.85±	Specialized forms or overbuild width	No
Structural Steel I-Girder	60' - 300'	\$125-\$220	Build-up	5.20' Elev 92.20±	Girder bending or overbuild width	No

⁽¹⁾ This is the span range for which the structure type is generally considered as an efficient bridge system.

⁽²⁾ For this comparison, the structure depth is that required to clear span over the UPRR right of way, based on a minimum span length of 130'. The approximate profile grade elevation is determined assuming the top of existing rail is at Elevation 64.0± and adding the 23'-0" permanent clearance envelope over the RR tracks plus the clear span depth.

⁽³⁾ "Build up" refers to the additional amount of deck thickness or topping slab thickness necessary to produce the desired profile grade and satisfy camber requirements.

The main factors for selecting the CIP/PS box girder alternative were 1) minimizing the profile grade elevation, 2) easily accommodating curves in horizontal and vertical alignment, 3) the historic cost effectiveness based on the use of standard construction techniques, and 4) accommodating the span length needed at this site.

STRUCTURE SPAN CONFIGURATION

Considering the site conditions and necessary span lengths needed to span the railroad and Porter Road, two alternative configurations would work for this site: a two and three span bridge structure (Reference General Plans in Attachment 6). Both bridge span configurations would provide the following:

- A clear span of the UPRR right of way (only temporary construction easements will be required)
- Allows for placement of future UPRR tracks on either side of the existing dual tracks
- Allows for future bike path or roadway, beneath the structure, West of Porter Road.

The following table illustrates the primary differences between these two alternatives

STRUCTURE ALTERNATIVE COMPARISON		
	Two Span Alternative	Three Span Alternative
Structure Layout	<ul style="list-style-type: none"> • Shorter structure (L= 261'-6") • Abutment 3 fill retained by 16' ± high MSE wall • Visual imbalance created due to nonsymmetrical spans and differing abutment fill conditions. 	<ul style="list-style-type: none"> • Longer structure (L= 309'-6") • Visual balance created due to symmetrical spans and similar abutment fill conditions.
Bridge Construction Cost	\$3,600,000 (\$157/SF) [See "General Plan Estimate" in Attachment 7]	\$3,850,000 (\$152/SF) [See "General Plan Estimate" in Attachment 7]
Profile Grade	Due to the longer structure spans the roadway elevation is 8" +- higher than the 3-span alternative	
Aesthetics	<ul style="list-style-type: none"> • A high MSE wall in front of the eastern abutment would be highly visible • (8") Deeper structure thickness making the structure appear heavier 	<ul style="list-style-type: none"> • Relatively balanced spans and open area beneath the structure • Thinner structure more aesthetically pleasing
Ability to Accommodate Future Path/ Road West of Porter	The 2-span alternative accommodates the bike path with no modifications to the fill, and can accommodate the road section in the future. No structure modifications would be required to accommodate this roadway; however, a 4-foot high retaining wall would be needed in front of the abutment to accommodate the full roadway section.	The 3-span alternative accommodates the bike path and the road section at a future date. No structure modifications would be required to accommodate the path or roadway. However, a 3-foot high retaining wall would be needed in front of the abutment to accommodate the bike path and a 13-foot high retaining wall would be necessary to accommodate the full roadway section.

Based on the overall visual balance of the spans, the 3-span, CIP/PS box girder structure with spans of 91'-3"/127'-0"/91'-3" is the recommended structure type and span configuration alternative. This alternative provides the required center span width to allow maximum opportunity for expansion of the UPRR facilities, a visually and structurally balanced span configuration, moderate structure costs, a lower level impact on the approach roadways and adjacent land-use interests (including utilities), and accommodates future access along the west of Porter Road.

7. Railroad Coordination

PDT members, consisting of TY Lin and the City of Dixon Staff, met with the Union Pacific Railroad, as well as the Public Utilities Commission (PUC), to coordinate the design of the Parkway Boulevard Railroad Grade Separation structure. Two separate meetings were held. The first meeting was held on March 9th, 2005 with Patrick Kerr of UPRR to coordinate with UPRR and to discuss the railroad's concerns. The following issues/concerns were discussed:

1. As mitigation for the project, UPRR expressed a desire to have the City develop long term plans to eliminate one or more of the existing at-grade crossings located within the City of Dixon. The City would be able to pursue PUC Grade Separation and Capital Corridor funds for elimination of an existing at-grade crossing.

2. UPRR may oppose the project, if no attempt was made by the City to prepare a long-term plan to eliminate some at grade crossings.
3. UPRR will ask for fair market value for aerial rights
4. UPRR does not oppose a tunnel alternative. However, they insisted that the shoofly would need to carry dual tracks and that there would be no reduction in the trains speed, by even 1 mph, during construction.
5. UPRR was OK with falsework, as long as the clearance requirements were met.
6. UPRR requested that the City plan for track expansion.

A second meeting was held with PDT members, Patrick Kerr of UPRR, and Marvin Kennix of the PUC on May 19, 2005. The purpose of the meeting was to coordinate with UPRR and PUC and to address concerns by the City (to the PUC) regarding the elimination of existing at grade separations. The following issues/concerns were discussed:

1. The PUC will view the proposed project as favorable, since it provides for a grade separation over the UPRR tracks.
2. If UPRR still opposes the project, the application to the PUC is filed without an agreement between the City and UPRR, and the application is subject to a legal hearing by an administrative law judge.

The agendas and meeting minutes from the meeting with UPRR and the meeting with UPRR and the PUC are included in Attachment 10

8. Environmental Determination and Clearance

The project will have federal involvement with the inclusion of federal funds. The anticipated environmental document for the proposed project is an environmental impact report (EIR) to comply with the California Environmental Quality Act (CEQA) and an environmental assessment (EA) to comply with National Environmental Policy Act (NEPA).

The CEQA lead agency will be the City of Dixon, and the NEPA lead agency will be FHWA, with Caltrans oversight.

Key resources and issue areas to be discussed as part of the EIR process would include: geology, soils, and seismicity; hydrology, water quality, and stormwater runoff; hazardous waste and materials; air quality; noise; biological resources; historical and archaeological resources; land use and recreation; public services and utilities; transportation and circulation; aesthetics; growth-inducing impacts; and cumulative impacts. A discussion of project alternatives will also be included in the EIR.

The following potentially beneficial environmental effects are expected to result from the proposed project:

- An improvement in traffic circulation, especially at the West A Street/SR 113 intersection during the PM peak hour and the cumulative improvement in traffic circulation.
- An improvement to public safety by providing east-west grade-separated access (over the railroad tracks) for emergency response vehicles.

The following adverse environmental effects could potentially result from the construction and operation of the proposed project:

- Noise and dust impacts to sensitive receptors;
- Impacts associated with construction-related traffic delays
- Air quality impacts associated with vehicle emissions;
- Impacts to the existing and planned drainage systems;
- Impacts related to erosion and soil stability;
- Potential for discovery of hazardous materials during excavation activities;
- Impacts to sensitive biological habitats and special-status plant species;
- Impacts to “wetlands” and “other waters of the U.S.,”
- Impacts to cultural resources;
- Impacts to existing land uses and utilities;
- Impacts to traffic circulation; and
- Impacts to visual resources for sensitive receptors, including residents in the vicinity of the new roadway.

In accordance with the signed Caltrans Preliminary Environmental Study (PES) Form, the proposed project would require preparation of the following environmental technical reports:

- *Noise Study Report*
- *Biological Resources – Section 7 Compliance (Natural Environment Study and Wetlands Delineation)*
- *Farmlands Study*
- *Hazardous Materials (Initial Site Assessment will be prepared by Parikh)*
- *Visual Report (with simulations)*
- *Cultural Resources - Section 106 Compliance (Archaeological Survey Report, Historic Architecture Study Report, and Historic Property Survey Report (ASR/HASR/HPSR))*

Depending on the preliminary design and alternative selected, the following permits may be required:

- Section 404 of the Clean Water Act,
- Section 401 of the Clean Water Act,
- Section 1601 of the California Fish and Game Code

There are no mitigation costs identified at this time. There may be environmental scheduling constraints (e.g. construction windows, Section 7 consultation for endangered species issues, biological monitoring, acquisition of permits to enter, etc.).

Assuming an environmental document consisting of an EIR to comply with CEQA and an EA to comply with NEPA, it is estimated that approximately 18 to 24 months would be required to prepare and process the technical reports and CEQA and NEPA documents to obtain environmental approval.

TYLI prepared the Notice of Preparation (NOP) for the EIR (see Attachment 11) and submitted it to the public for a 30-day review on February 15, 2005. A public workshop was held on March 2, 2005 to receive public scoping comments on the two project alternative alignments. Public scoping ended March 15, 2005 and TYLI collected the comments from public (see Attachment 3).

9. Hazardous Materials

An Initial Environmental Site Assessment (ESA) is being prepared for the Parkway Boulevard environmental document to assess the potential for hazardous materials or petroleum products to exist within the immediate project site. The ESA was based upon on a review of previous land uses in the area through review of historical aerial photographs, a field inspection of the project route, and a review of listings of Federal and State regulatory agencies that are responsible for recording incidents of spills, and soil and ground water contamination and transfer, storage, or disposal facilities that handle hazardous materials. No physical testing or subsurface exploration was carried out.

Previous land uses at the project area were primarily limited to agricultural and railroad right of way.

Active Union Pacific Railroad (UPRR) tracks cross the subject area. Associated with the railroad right of way is a Kinder Morgan Energy fuel pipe. During the construction activities, Kinder Morgan should be contacted to prepare a plan to re-route the pipeline, or provide oversight during construction activities. The soil within the railroad right of way may also be impacted with heavy metals, total petroleum hydrocarbons as diesel, and polynuclear aromatic hydrocarbons (PNAs). In that regards, soil samples should be collected within the railroad right of way and the project area, and analyzed for the above constituents.

Based on review of aerial photographs, the properties west of the UPRR right of way have been in agricultural use since prior to 1937. It is likely for the soil within the proposed Subject Area to have been impacted with hazardous levels of pesticides, herbicides and arsenic (used as an herbicide in the early 20th century). It is therefore recommended that surface soils be tested for these chemicals. A work plan describing sampling locations and sampling and analytical methods should be prepared prior to start of work.

Aerial photographs indicate that Pitt School Road has supported vehicular activity since early 20th century. It is likely for the surface soils along Pitt School Road to have been impacted with aerielly deposited lead. Soils along the Pitt School Road within the Subject Area should be tested for presence of lead.

Other than noted above during the site reconnaissance of the Subject Area, environmental areas of concern were not readily identified or apparent based on the scope of work performed in this project.

The ESA for this site is determining that there is a high potential for hazardous waste contamination within the proposed project right-of-way.

10. Funding/Scheduling

The project is currently being funded with \$2,344,000 in Federal High Priority Funds with the remainder of the funding from City Development Fees.

PROJECT COSTS

Construction costs of the proposed roadway were based on historical cost data obtained from Caltrans Contract Cost Data, verified by local data, and based on guidelines given in the Caltrans Project Development Procedures Manual.

A summary of the estimated construction and administrative costs for orange alternative is included in the following table. A detailed construction cost estimate has been prepared for this alternative and is included in Attachment 7.

GREEN ALIGNMENT WITH 3-SPAN STRUCTURE

Item	Cost
Roadway	\$5,150,000
Structure	\$3,205,000
Construction Cost (Subtotal)	\$8,355,000
Contingency (25%)	\$2,088,800
<u>Total Construction Cost</u>	\$10,443,800
Engineering (PS&E) and Environmental Studies/Permits	\$1,400,000
Right-of-Way (appraisal, acquisition, and existing utility relocation) ²	\$750,000
Construction Management	\$1,263,000
<u>Total Administrative Costs</u>	\$3,413,000
TOTAL PROJECT COSTS	\$13,856,800

ESTIMATED PROJECT SCHEDULE³

COMPONENT	Start Date	Completion Date
Environmental Studies and Permits	May 2005	June 2007
Project Design (Plans, Specifications & Estimate)	February 2005	October 2007
Right-of-Way	May 2007	November 2007
Construction	March 2008	December 2008

11. Recommendations

ALIGNMENT ALTERNATIVES

Based on this preliminary engineering assessment, input provided by representative of the City of Dixon and Solano County, and input received during public hearings and stakeholder meetings, it is recommended that the Green and Orange alignment alternatives be carried forward for equal level consideration in the environmental process (see Attachment 6).

² Right-of-way costs provided by City.

³ This is an estimated project schedule, which relies heavily on Caltrans and the FHWA's timely review of the environmental documents. Because this project is partially funded with federal funds, final design and right of way acquisition cannot begin until the NEPA environmental approval.

ROADWAY GEOMETRICS

Independent of the final alignment alternative selected, the following roadway geometrics were developed through traffic operation analyses and were discussed and accepted by engineering staff from the City of Dixon and Solano County.

PARKWAY BOULEVARD

Parkway Boulevard will be comprised of a 92 ft wide minor arterial (from back of walk to back of walk) from Valley Glen Road to Pitt School Road. The roadway would consist of four through-lanes with a center turn lane/median. The two outer travel lanes would be 12 ft wide, and the two inner travel lanes (adjacent to the median) would be 13 ft wide. The center turn lane/median would be 16 ft wide. 7 ft wide shoulders/Class II bike lanes and 6 ft wide sidewalks would be included on each side of the road. The center median will narrow to 4 ft across the structure, corresponding to an 80 ft wide roadway (from back of walk to back of walk). Parkway Boulevard would have a design speed of 45 mph with an anticipated posted speed limit of 35 mph.

As part of this project for an interim condition and until ultimately needed, the roadway will be built to the above-described dimensions, but it will be striped for one lane (13 ft wide) of traffic in each direction.

PITT SCHOOL ROAD

As part of this project, Pitt School Road will be improved to a two-lane facility with shoulders, extending from the City-County limit south past the proposed intersection with Parkway Boulevard to the existing intersection with Porter Road. The centerline of the improved roadway will maintain the existing centerline of the right-of-way.

In the ultimate configuration to accommodate future vehicle and pedestrian traffic, it is recommended that Pitt School Road be widened south of Hillview Drive to four travel lanes (two in each direction), plus sidewalks and Class II on-street bike lanes on both sides. The ultimate improvements will be constructed as part of the SWDSP developments.

PARKWAY BOULEVARD / PITT SCHOOL ROAD INTERSECTION

As part of this project, an unsignalized traffic control is adequate to provide acceptable traffic operations. The intersection will provide the following:

- Westbound Approach on Parkway Blvd: Provide one exclusive left-turn lane and one exclusive right-turn lane; stop-control for left-turn movement and yield control for right-turn movement, with an appropriate radius to facilitate slower right-turn movements.
- Northbound Approach on Pitt School Rd: One shared through/right-turn lane; stop control for all movements.
- Southbound Approach on Pitt School Rd: One shared through/left-turn lane; stop control for all movements.

In the ultimate configuration to accommodate future vehicle and pedestrian traffic, it is recommended that a traffic signal be installed at the intersection. The intersection will require the following:

- Westbound Approach on Parkway Blvd: Provide one exclusive left-turn lane and two exclusive right-turn lanes.
- Northbound Approach on Pitt School Rd: One through lane and one exclusive right-turn lane.
- Southbound Approach on Pitt School Rd: One through lane and two exclusive left-turn lanes, with 250 ft of vehicle storage per lane.

The ultimate improvements will be constructed as part of the SWDSP developments.

STRUCTURE ALTERNATIVES

Based on an Advance Planning Study considering the project goals, crossing location, land use constraints, and preliminary engineering calculations, it is recommended that the structure be comprised of a three-span, cast-in-place post-tensioned concrete box girder superstructure supported on cast-in-drilled-hole pile-shafts bents and seat-type abutments on driven piles. The structure will have spans of 91'-3"/127'-0"/91'-3" for an overall length of 309'-6" and an overall structure width of 82 ft (accounting for 1 ft barriers along each edge of deck).

12. Project Contacts

Organization	Contact	Phone Number
City of Dixon	Jason Riley <i>Associate Engineer</i> <i>City Project Manager</i>	(707) 678-7031
County of Solano	Leo Flores, <i>Eng Services Supervisor</i> <i>County Contact</i>	(707) 421-6060
T.Y. Lin International	Dennis Haglan <i>Project Manager</i>	(916) 366-6331
T.Y. Lin International	Elizabeth Hughes <i>Environmental</i>	(916) 366-6331
Judith Buethe	Judith Buethe <i>Public Outreach</i>	(209) 464-8707
Fehr and Peers	Jason Isaac <i>Traffic Studies</i>	(916) 773-1900

13. Registered Civil Engineer Stamp

This Project Study Report Equivalent has been prepared by Teresa Lopes, P.E. under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

Dennis Haglan, P.E.
Project Manager
T.Y. Lin International

Project Study Report Equivalent prepared for the City of Dixon
Traffic Services provided by Fehr & Peers Associates, Inc.

14. List of Attachments

ATTACHMENT 1	Project Vicinity Map
ATTACHMENT 2	Existing Transportation Facilities
ATTACHMENT 3	Meeting Minutes and Agendas from Public Hearings and Stakeholder Meetings
ATTACHMENT 4	Traffic Operations Report (w/o Technical Appendices)
ATTACHMENT 5	Alignment Alternatives
ATTACHMENT 6	Preferred Alternatives Project Plans
ATTACHMENT 7	Preferred Alternatives Cost Estimates
ATTACHMENT 8	Tunnel Alternative Assessment
ATTACHMENT 9	Limitations on Substructure Placement
ATTACHMENT 10	Meeting Minutes and Agendas from UPPR and PUC
ATTACHMENT 11	Notice of Preparation

ATTACHMENT 1

ATTACHMENT 2

ATTACHMENT 3

ATTACHMENT 4

ATTACHMENT 5

ATTACHMENT 6

ATTACHMENT 7

ATTACHMENT 8

ATTACHMENT 9

ATTACHMENT 10

ATTACHMENT 11