1	Exhibit No (CEB - 1T)
2	ODICINIAL
3	ORIGINAL
4	
5	
6	
7	BEFORE THE WASHINGTON STATE UTILITIES AND TRANSPORTATION COMMISSION
8	CITY OF FIFE, DOCKET TR-100098
9	Petitioner, PREPARED TESTIMONY OF CHARLES
10	v. BURNHAM, P.E.
11	UNION PACIFIC RAILROAD,
12	Respondent.
13	*
14	Summary of Testimony: I, Charles E. Burnham will testify regarding the design, location and cost
15	of the proposed pedestrian at-grade crossing as well as the alternatives considered by the City.
16	Testimony:
17	1. Please State your name, job title, and place of business.
18	Charles E. Burnham, PE
19	Vice President/Senior Project Manager
20	
21	David Evans and Associates, Inc.
22	3700 Pacific Highway East, Suite 311
23	Fife, WA 98424
ر مر	

2. Briefly describe your education and professional background.

I have a BS in Civil Engineering from the University of Washington. I am a Registered Professional Engineer in the State of Washington. I have over 35 years of experience as an engineer all in the rail industry.

3. What is your involvement with the City's proposed at grade pedestrian crossing?

David Evans and Associates, Inc. ("DEA") was hired by City to do engineering and consulting for the proposed pedestrian at-grade crossing. I am the project manager for the project.

4. Please describe the pedestrian crossing that the City is proposing.

The pedestrian crossing at 54^{th} Avenue will be located immediately east of and parallel with the existing 54^{th} Avenue grade crossing. The crossing of the track is a precast concrete crossing. The approaches are asphalt concrete. The 12-foot pathway will be separated from the roadway by a chain link fence. The plans for the proposed pedestrian crossing are attached hereto as Exhibit No. _____ (CEB - 2).

5. Please describe the safety features that will be utilized.

Both crossing approaches will be fenced to keep pedestrians on the pathway and direct them to crossing. The approaches to the crossing will both have Z-gates in the pathway. Z-gates force pedestrians to move through a chicane to slow them down and face them in both directions parallel to the UPRR track before crossing the track. The crossing will also be protected by automatic flashing railroad crossing lights and gates. There will be a concrete tactile warning strip on each approach. Appropriate signing and pavement striping will also be utilized.

7. Please describe the grade and alignment of the proposed crossing.

The alignment of the pathway approximately parallels the easterly edge of 54th Avenue. It connects on the south to an existing sidewalk on the east side of the street. On the north, it connects

to an existing pathway on the eastside of the street approximately 135 feet north of the crossing. Approach grades are 2.49% from the south and 6.25% from the north. The grade is level for 25 feet each way from the centerline of the track along the pathway. The grade north of the crossing slightly exceeds the recommended approach grade of 5.00%. This is necessary to meet the grade of the existing pathway north of the crossing.

Are the sight distances adequate?

Sight distances at the crossing are adequate for a passively protected crossing. Sight distance is not a consideration at an actively protected crossing with automatic signals and gates. Refer to Section 7b of the petition and the Pedestrian Sight Distance diagram attached hereto as Exhibit No. (CEB-3) for additional information.

9. Did DEA prepare a cost estimate for the proposed at-grade pedestrian crossing?

DEA did not prepare a formal cost estimate. UPRR will design the modifications to the existing grade crossing signals and gates and prepare a cost estimate for that work. The other pedestrian crossing improvements include fencing, gates, culverts, concrete tactile warning pads. asphalt paving, signage and pavement striping. The estimated costs for the general pathway improvements are expected to be in the range of \$50,000 to \$75,000. Based on my professional experience a rough estimate of total costs for the at-grade pedestrian crossing is \$155,000 to \$250,000.

10. Did DEA analyze grade separation alternatives?

Yes, our firm prepared a pedestrian grade separation study in September 2007, analyzing three alternative locations for a pedestrian over/under pass in three different locations in the area between 54th Avenue East and 70th Avenue East. A copy of the study and vicinity map are attached hereto as Exhibit No. ____ (CEB-4). Estimated low cost estimates for the alternatives ranged from

Phone: 253.922.5464 253.922.5848

____ (CEB-2 Exhibit No.

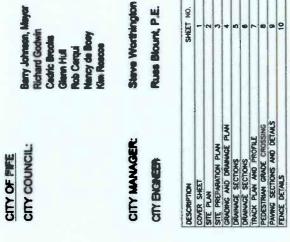
54TH AVENUE / UPRR PEDESTRIAN GRADE CROSSING CITY OF FIFE

PORTIONS OF SEC. 7 and 12, T.20N., R.3E., AND R.4E., W. M., CITY OF FIFE, PIERCE COUNTY, WASHINGTON









Ŧ.

Z

8

Z

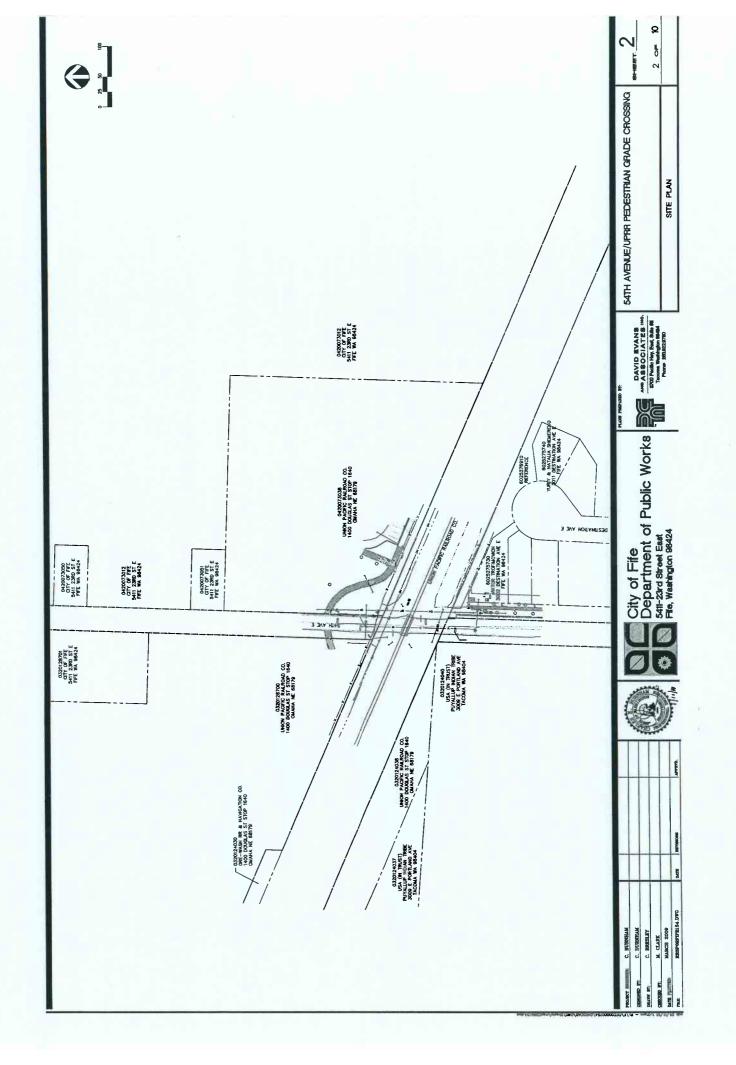
7

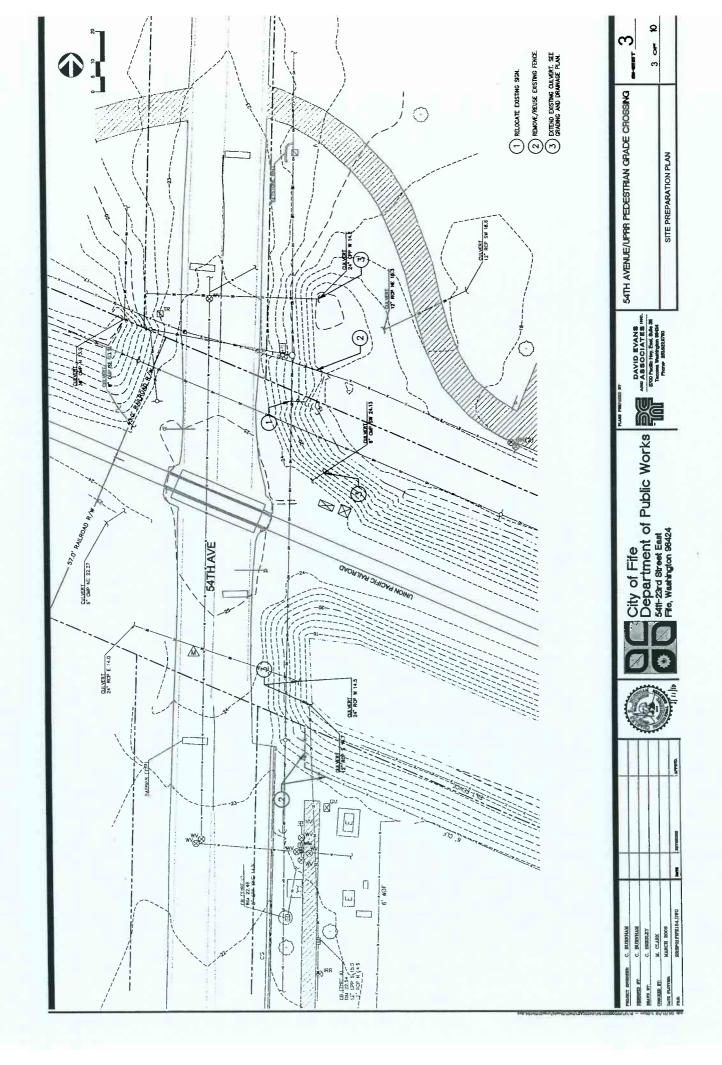
VICINITY MAP

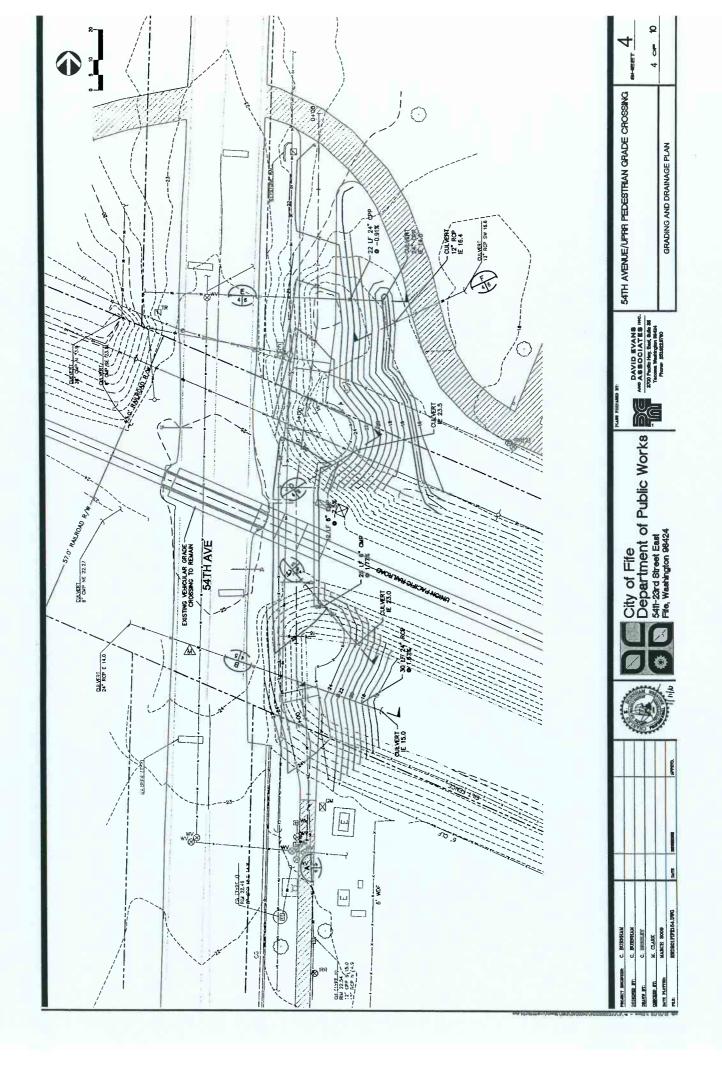
R.A.E.

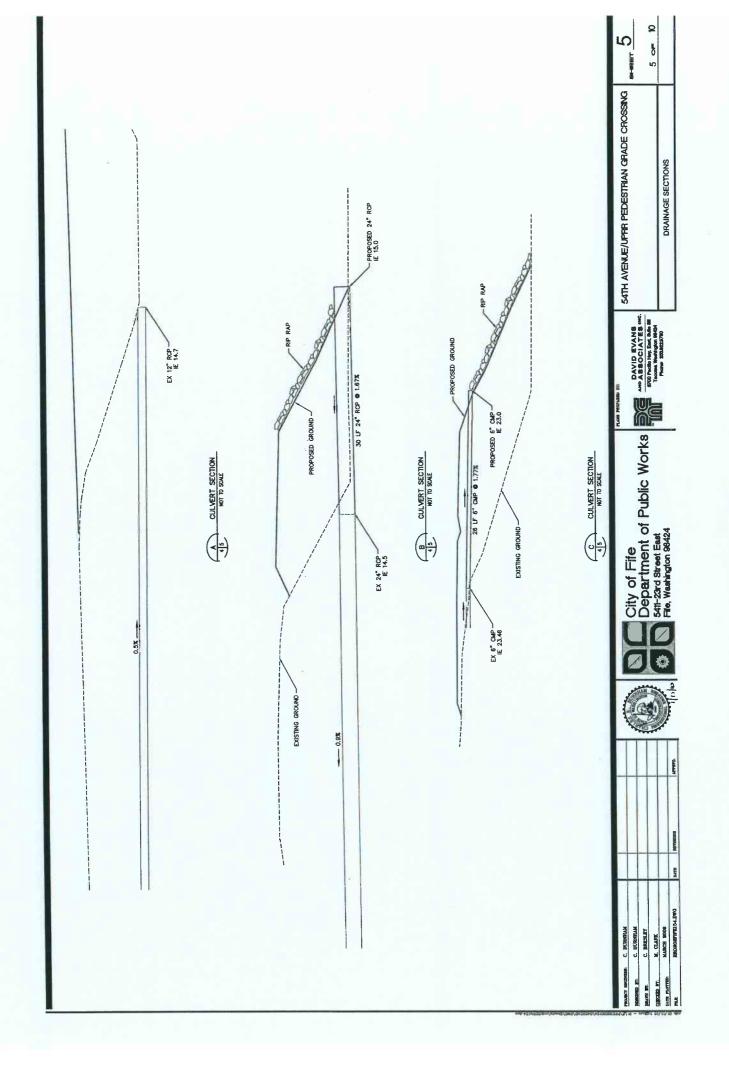
R.3.E.

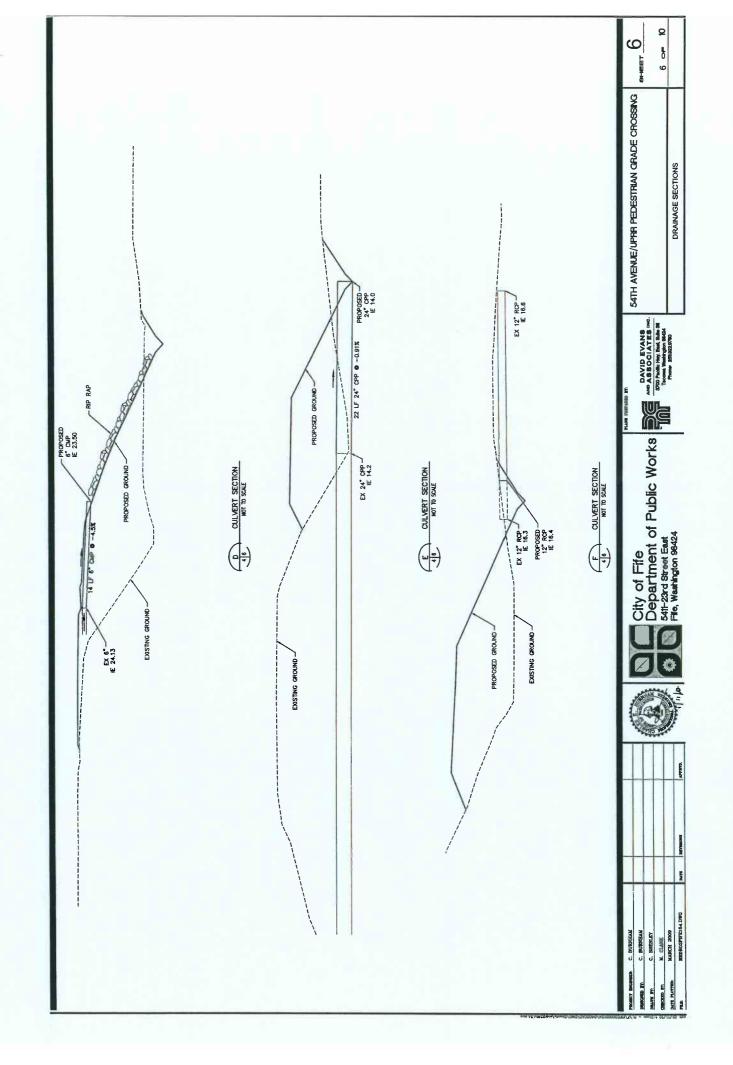
City of File Department of Public Works	City of File Department of Public Works	DAVID EVANS SATH AVENUE/APPR PEDESTRAN GRADE CROSSING MASSOCIATES MA.	200 Tupin ing tank data 20 Tunan Walangan data Tunan Sandaning	COVER APPEL
amage Live	4.0VC prof. meterman			
amage Live	4.0VC prof. meterman	City of File		
	4,000	City of File		
	1000	City of File		
	C. DUBINISAM C. DISSUARY E. CLARK MARCH 2000	City of Fig.		

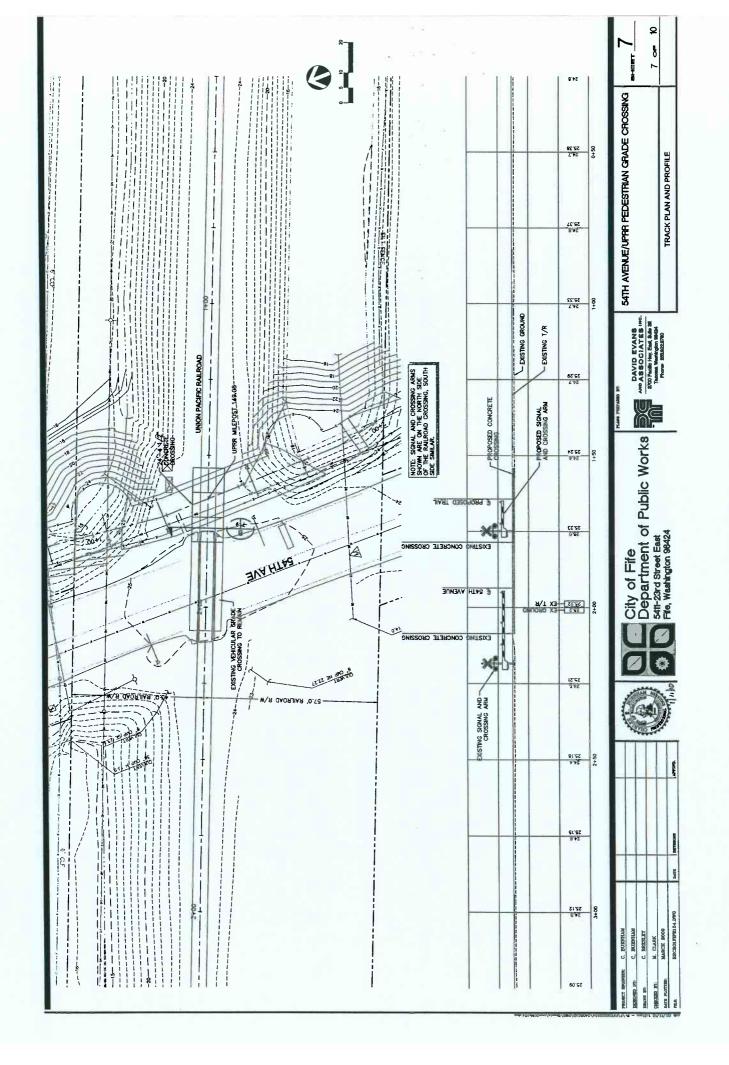


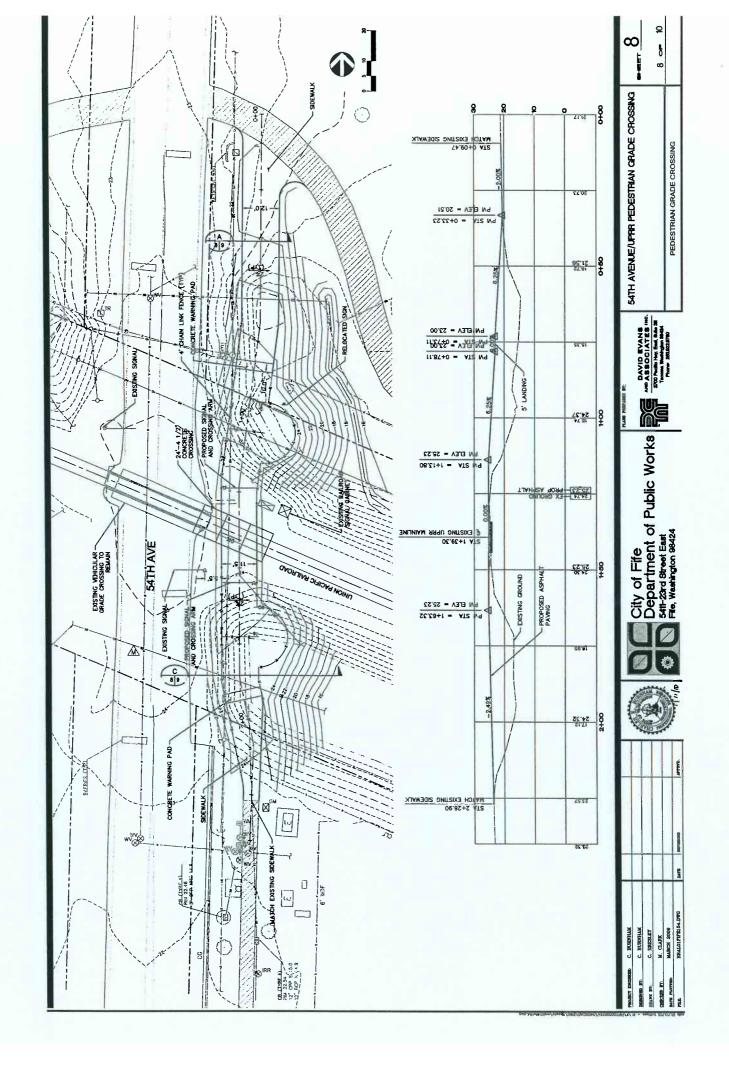


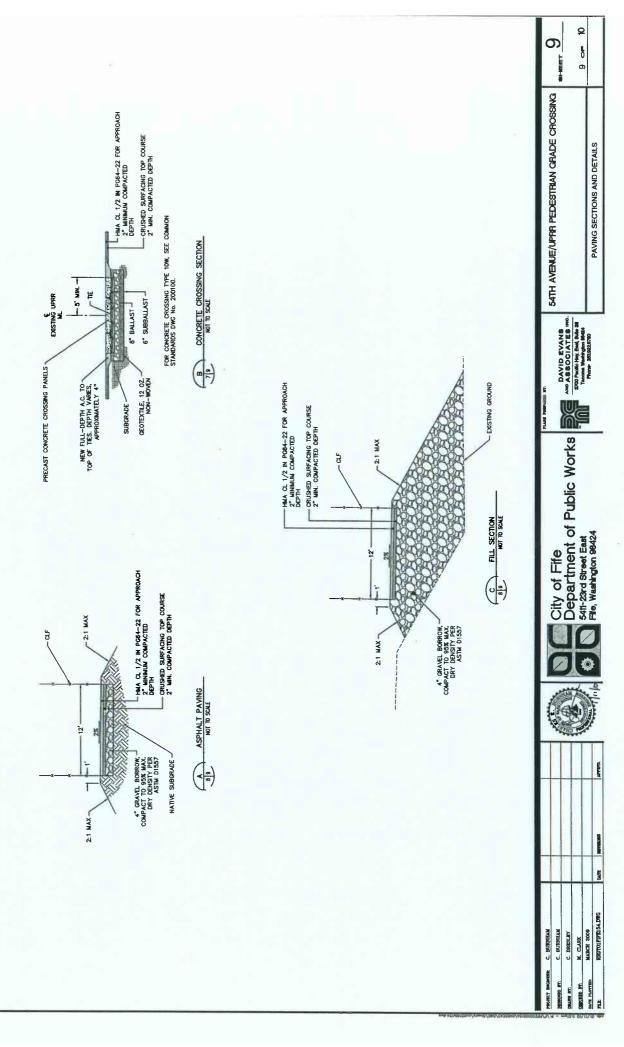


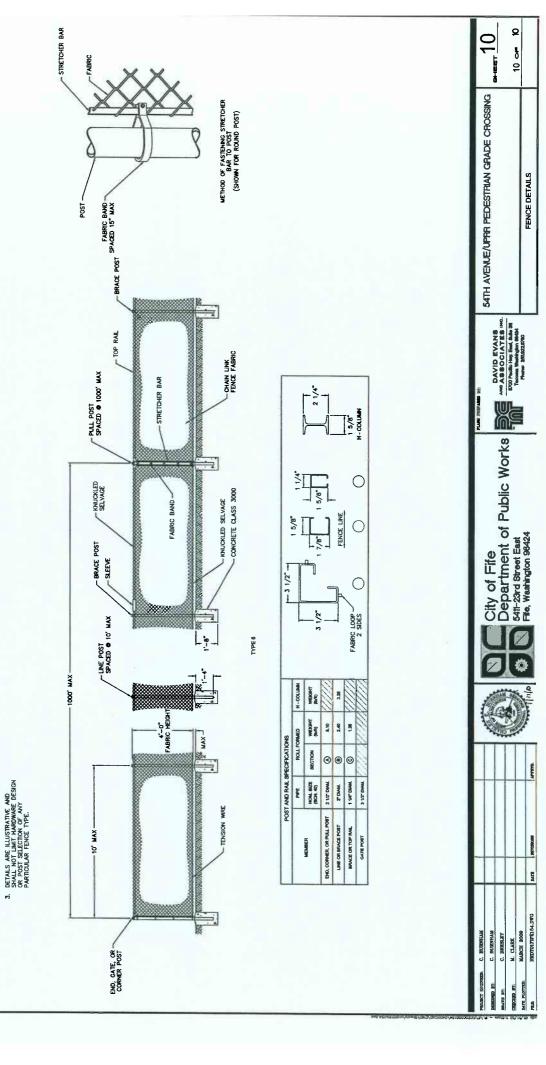




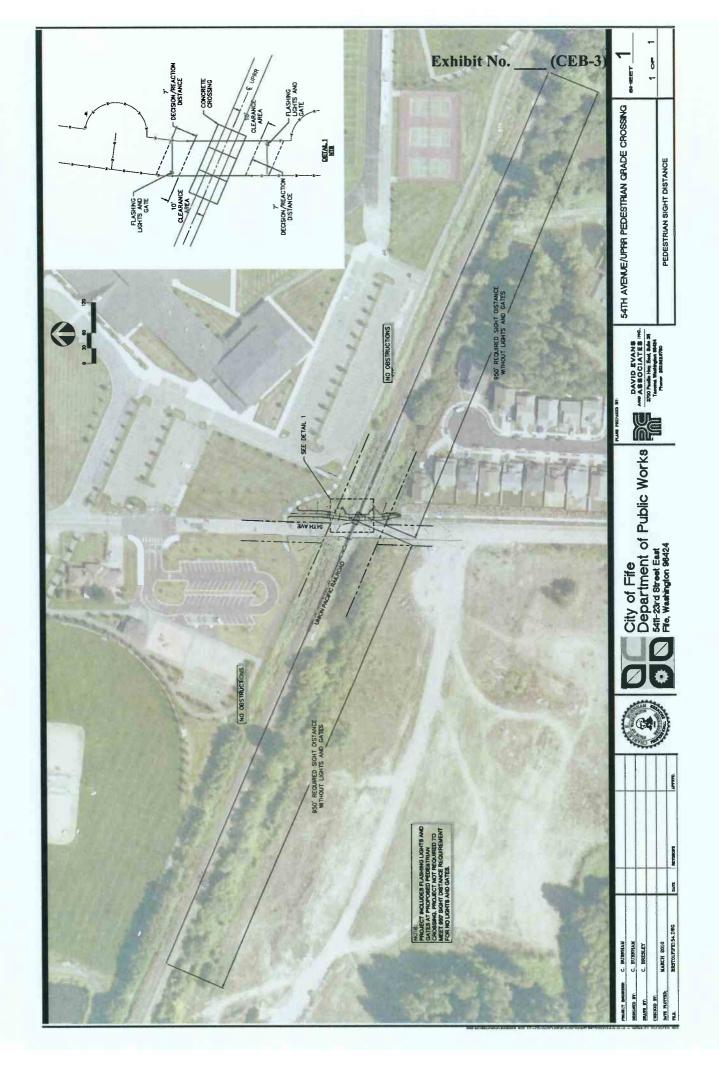








1. ALL CONCRETE POST BASES SHALL BE 10° MINIMUM DIAMETER. 2. TENSION WARE SHALL BE PLACED MITHIN THE LIMITS OF THE PRIST FULL FABRIC WEAVE.





UPRR Pedestrian Grade Separated Crossing Type Size and Location Study

Prepared for:

CITY OF FIFE 5411 23rd street East Fife, Washington 98424

Prepared by:

DAVID EVANS AND ASSOCIATES, INC. 3700 Pacific Highway East, Suite 311 Tacoma, Washington 98424

> Contact Person: Michael D. Clark, P.E.

September 18, 2007

RECEIVED
AUG 2 1 2007
City of Fig.

UPRR Pedestrian Grade Separated Crossing

Bridge TS&L Report

TABLE OF CONTENTS

Summary	
Option Descriptions	2
Environmental Considerations	3
Wetland Location Exhibit	4
Connectivity	5
Construction Duration	5
UPRR Issues	5
Public Acceptance	
Maintenance	
Constructability	7
Right-of-way	<i>7</i>
Cost Estimates	
Decision Matrix	
Option A	
Option A with MSE Wall	
Option B	
Option B with MSE Wall	
Option C	
Option C Tunnel	
Wetland Exhibit	

SUMMARY

This Type, Size and Location (TS&L) was developed for a proposed pedestrian grade separation over or under the Union Pacific Railroad (UPRR) located between 54th Avenue East and 70th Avenue East, in Fife, Washington. The purpose of the report is to identify relevant information to be used in determining the most reasonable pedestrian crossing solution. Following the meeting on July 18, 2007 between the City of Fife and staff from David Evans and Associates Inc, it was determined that three option locations would be considered. The Option A location would link the southeastern corner of Columbia Junior High School to the 5 acre park on Radiance Boulevard. Option B is located approximately mid way between 54th and 70th Avenues. Option C is approximately 800 feet east of the option B.

For the purposes of this report, it was agreed that the overpass structures to be analyzed would consist of pre-cast concrete girders supported by cast-in-place concrete piers and/or abutments. Steel structures are also viable options, however, current steel prices would likely result in an approximate 20% increase in construction cost.

Structural aesthetics will be considered as the design is developed. The design approach will be to blend in with the surrounding community. Depending on the alternative that is selected that may involve considerations such as impacts to the junior high school, Mount Rainier views, or public security concerns. In addition, we have identified opportunities to reduce project cost through the use of MSE walls or excavation in the case of the tunnel option.

OPTION DESCRIPTIONS

Two alternatives are considered at each of the option locations. Over-passes are assumed at locations A and B and an under-pass is considered at location C. It is understood that the over-pass and under-pass alternatives are interchangeable between locations B and C. However an under-pass at location A is not reasonable due to the skewed angle of the crossing, as well as, the extensive environmental impact that would occur.

The first over-pass alternative considered at each location assumes that the main crossing span and the majority of the approaches are constructed from pre-cast concrete girders. The girders are supported by cast-in-place concrete piers or by the abutments at the ends of short approach ramps consisting of earth fill retained between reinforced concrete retaining walls. Based on the soils expected to be encountered at the site, either drilled shafts or driven piles could be used for foundation types. The cost estimates in this report assume drilled shafts but ultimately the selection of the optimal foundation type will be determined during design.

The second over-pass alternative considered at each location assumes that Mechanically Stabilized Earth (MSE) walls are used to shorten the structure and to replace the reinforced concrete retaining walls. Option A with MSE walls uses 360 linear feet of structure to span the UPRR and the wetland adjacent to the school. This reduces the overall Option A bridge length by 360 feet and replaces 450 feet of concrete retaining walls. Option B with MSE walls uses only 110 linear feet of structure to span the UPRR. This reduces the overall Option B bridge length by 550 feet and replaces 405 feet of concrete retaining walls.

Abutments at the ends of the bridge are located at the ends of either the reinforced concrete retaining walls or the MSE walls. Fill behind the abutments will be retained by these walls. The abutments will be cast-in-place concrete walls on footings supported on drilled shafts in a single row. The drill shafts would be constructed prior to placement of the MSE walls which would be built behind the shafts. Since the bridge spans would be supported on the shafts. Settlement of the MSE walls backfill would not adversely affect the superstructure. Down drag forces on the drilled shafts will be considered as well as the stability of the coils underlying the MSE wall fill.

Two under-pass alternatives are considered at the location of Option C. The first alternative assumes that the walls of the approaches to the tunnel are vertical, structural concrete pile walls similar to the walls within the tunnel itself. The second alternative takes advantage of cost savings that would be realized by excavating the tunnel approaches and leaving appropriate cut slopes down to the walking surface. The cost estimate assumes a 2:1 cut slope. However, the final design slope would be determined during design and will be influenced by the public's use of the area and the desired landscaping.

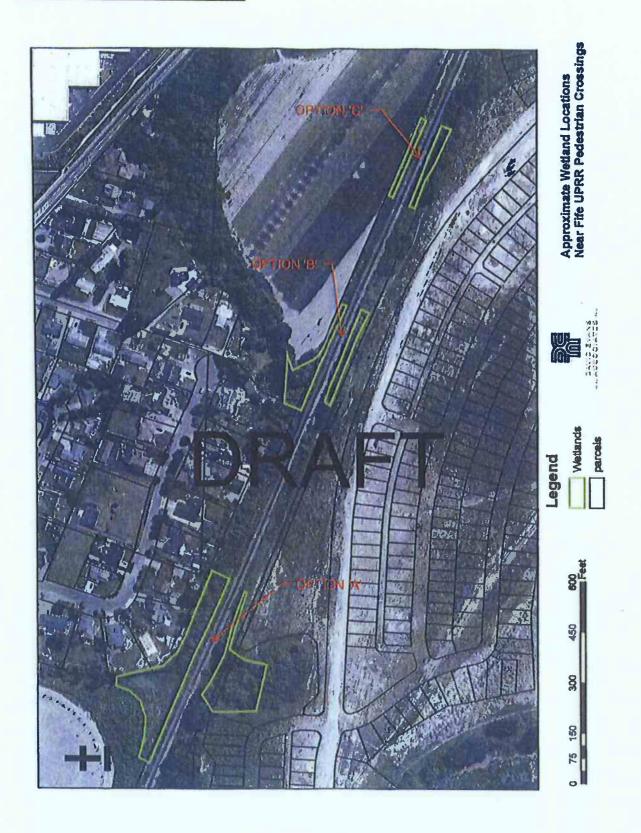
ENVIRONMENTAL CONSIDERATIONS

Each of the three project locations would potentially impact some environmental resources. Narrow linear wetlands run along both the northern and southern sides of the UPRR in the vicinity of all three proposed crossings. A narrow palustrine emergent wetland is located on the north side of the railroad at the eastern (Option C) and central (Option B) crossings, while a palustrine scrub-shrub wetland is located on the south side of the tracks. Option C would result in either the removal or reconstruction of the very small portions of these wetlands. Option B could be constructed without disturbing the wetlands.

The western (Option A) crossing has the most significant potential environmental impacts due to the presence of a forested wetland on the south side of the railroad (which connects to the ditch wetlands) as well as a large riparian wetland on the north side of the railroad that is associated with Wapato Creek. The current northern approach to the western crossing would cross a significant portion of this wetland as well as skirt Wapato Creek, a perennial stream that drains much of the Puyallup River Valley and flows into the Blair Waterway and Commencement Bay. Wapato Creek is known to support spawning salmon, including coho and winter steelhead trout, the latter of which is a federal Threatened species. All of the wetlands identified at the three crossings on the north side of the railroad are connected to Wapato Creek, and the wetlands south of the railroad are likely to be connected to Wapato Creek via culverts, although these have not been field located at this time.

Because of these connections to Wapato Creek, these wetlands are likely under the jurisdiction of the U.S. Army Corps of Engineers, and any impact to them would require a permit from the Corps. Other permits and/or approvals that would likely be required include a Hydraulic Project Authorization (HPA) from the Washington Department of Fish and Wildlife, a Section 401 (of the Clean Water Act) water quality certification from the Washington Department of Ecology, as well as a State Environmental Policy Act (SEPA) decision and a clearing and grading permit from the City of Fife. Due to possible impacts to listed fish in Wapato Creek, the Option A crossing may require preparation of a Biological Evaluation for the Corps and consulting federal agencies (U.S. Fish and Wildlife Service and National Marine Fisheries Service). At a minimum, Option A would require one pier to be constructed within the wetland.

WETLAND LOCATION EXHIBIT



CONNECTIVITY

An important consideration in the selection of the appropriate crossing option is how well the option is connected to the city street network and the destinations that are being served. Also, since there are plans to eventually construct grade separate railroad crossings at both 54th and 70th, the current connectivity as well as the future connectivity needs to be considered.

The alternatives located at option A provide the best current connectivity. The Option A location connects directly to the school and the neighborhood in which the students live. It would be well used immediately and would improve safety by removing the temptation for students to cross the active train tracks.

Both Options B and C provide far less current connectivity benefit. The immediate usefulness of both these locations is hampered by the lack of infrastructure on the north side of the UPRR right-of-way. Both will eventually connect to the city's trail system, however, until then it is unlikely that the crossings will be highly used. The cost estimates for options A and B do not include any cost for the trail upgrades. Upon completion of the proposed grade separations at 54th and 70th and the city trails, both of these locations are more centrally located than Option A and therefore may ultimately have higher use by the general public than Option A. Also, a grade separated crossing at 54th would provide students with a safe, convenient option for accessing the school.

CONSTRUCTION DURATION

Construction duration would be shortest for the over-pass alternatives, without MSE walls, located at Options A and B. The construction of these alternatives could occur during a single construction season. The relatively small amount of fill material required to construct these alternatives would be placed behind cast-in-place, concrete retaining walls. Therefore, the fill could be accommodated without the embankment pre-loading that would be necessary with the MSE alternatives.

To utilize MSE walls, it is assumed that some form of soil stabilization will be required due to the compressible soils that are likely to be encountered. To minimize estimated costs, it is assumed that soil pre-loading would be used in lieu of more costly methods of soil strengthening. Pre-loading is typically done over a six to nine month period. As a result, the construction schedule is likely to extend beyond a single construction season. To minimize impacts to the construction schedule we recommend that construction sequencing include placing the bridge abutment foundations prior to pre-loading.

UPRR ISSUES

The UPRR prefers any over-pass alternative to an under-pass. Their primary objection revolves around the future use of their right-of-way and the ease of making changes. The UPRR will accommodate either crossing method but it is anticipated that the over-pass alternatives would

involve a more timely UPRR approval process. Once approved plans are complete the UPRR permitting process would be the same for any of the alternatives.

Over-passes must span the entire right-of-way and vertical clearance must exceed 23 feet, 4 inches. An under-pass in this location must accommodate the construction of a future track and provide service roads. In addition, the existing drainage ditches on both sides of the track-way need to be extended across the tunnel. When the typical UPRR track construction standards are applied the required length of tunnel becomes the full right-of-way width.

The under-pass would also necessitate the construction of a temporary shoofly track approximately ½ mile in length. The cost estimate for the tunnel alternatives assumes that the cost of a shoofly is bourn by the project. However, there may be an opportunity that some of this cost could be shared with the UPRR and would be investigated during design.

The UPRR will require that all drainage from any of the alternatives be conveyed to the city storm drain system. It is also possible that the drainage from inside the tunnel would be considered as coming from a building and would therefore have to be conveyed to the sanitary sewer.

PUBLIC ACCEPTANCE

A safe, convenient pedestrian crossing of the UPRR track would be a valued public asset. The three Option locations have differing elements that impact the public's acceptance of a crossing in their respective locations. The elements considered here are pedestrian use, Mount Rainier view impacts, and public safety.

The Option A over-pass alternatives are in the best location to generate immediate use by the public because of good connection to existing infrastructure. It is a location that is currently the most shielded by existing trees and is the least likely to generate concern about blocking views of Mount Rainier. Like all of the bridge alternatives it is less likely to raise safety concerns associated with entering a dark, unobservable facility such as a tunnel.

The Option B over-pass alternatives will not provide the immediate public use that the Option A location does. The location of B also places the over-pass between the existing neighborhood and Mount Rainier.

The Option C under-pass would over come objections concerning view blockage but would meet with some resistance due to the perceived safety of enter the tunnel, especially at night.

MAINTENANCE

Maintenance of the bridge structures in combination with MSE walls would have the least costly routine maintenance obligation. Graffiti removal may be required slightly more often than with the long bridge alternatives since the area of vertical wall surface is increased. Therefore, to minimize the graffiti threat, design consideration would be given to measures such as the use of vegetated or roughened surfaces.

The tunnel alternatives would require the installation of a pump station to provide drainage below the UPRR. There would be an ongoing need to maintain and operate the pumping facility. In addition, the threat that graffiti becomes greater potential problem because of the lack of observability that is inherent with a tunnel. It will also be more difficult to devise effective antigraffiti measures for the vertical tunnel walls.

CONSTRUCTABILITY

Constructability is not perceived to be a major concern with any of the alternatives. The construction methods that will be employed in all cases are well understood and will not present major constructability issues. The under-pass alternatives would present the major constructability challenges simply because of the unknowns that are always associated with underground work. Also, the under-pass alternatives require the greatest coordination effort with the UPRR.

RIGHT-OF-WAY

Option A is the only location that presents a right-of-way impact. The northern touchdown of the project is on school district property. Either a right of use agreement or a right-of-way purchase will be required.

COST ESTIMATES

					NEER'S ATE (low)		NEER'S ATE (high)
Item	Description	Unit Price	Amount	Unit Price	Amount		
Option A							
1	Bridge Structure	SF	9,000.00	\$225.00	\$2,025,000.00	\$450.00	\$4,050,000.00
2	Cast-in-place retaining wall and walkway concrete	CY	565.00	\$500.00	\$282,500.00	\$500.00	\$282,500.00
3	Reinforcing Rebar	LB	113,000.00	\$1.00	\$113,000.00	\$1.00	\$113,000.00
4	Bridge Rail (on MSE)	LF	900.00	\$75.00	\$67,500.00	\$75.00	\$67,500.00
5	Drilled Shafts	LF	1,200.00	\$250.00	\$300,000.00	\$250.00	\$300,000.00
6	Lighting (assume 12 luminairs @\$ 5000)	LS	1.00	\$60,000.00	\$60,000.00	\$60,000.00	\$60,000.00
7	Drainage (to City system)	LS	1.00	\$15,000.00	\$15,000.00	\$15,000.00	\$15,000.00
8	Railroad Flagging	LS	1.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00
			- 100		\$0.00		\$0.00
	Base Estimate (Items Nos. 1-8)				\$2,963,000.00	7	\$4,988,000.00
	30% Contingency			1007	\$888.900.00		\$1,496,400.00
	5% Permits	-		-4157	\$148,150.00		\$249,400.00
	25% Design & Construction Management				\$740,750.00		\$1,247,000.00
	GRAND TOTAL				\$3,851,900.00		\$6,484,400.00

				175	NEER'S ATE (low)	ENGINEER'S ESTIMATE (high)	
ltem	Description	Unit	Quantity	Unit Price	Amount	Unit Price	Amount
	Option A w/MSE walls						
1	Bridge Structure	SF	4,500.00	\$225.00	\$1,012,500.00	\$450.00	\$2,025,000.00
2	MSE wall	SF	27,000.00	\$25.00	\$675,000.00	\$30.00	\$810,000.00
3	Abutment wall & walkway	CY	216.00	\$500.00	\$108,000.00	\$500.00	\$108,000.00
4	Reinforcing Rebar	LB	10,000.00	\$1.00	\$10,000.00	\$1.00	\$10,000.00
5	Bridge Rail (on MSE)	LF	1,720.00	\$75.00	\$129,000.00	\$75.00	\$129,000.00
6	Drilled Shafts	LF	600.00	\$250.00	\$150,000.00	\$250,00	\$150,000.00
7	Lighting (assume 12 luminairs @\$ 5000)	LS	1.00	\$60,000.00	\$60,000.00	\$60,000.00	\$60,000.00
8	Drainage (to City system)	LS	1.00	\$15,000.00	\$15,000.00	\$15,000.00	\$15,000.00
9	Structural fill	CY	16,000.00	\$15.00	\$240,000.00	\$20.00	\$320,000.00
10	Right-of-way (School District)	SF	9,300.00	\$12.00	\$111,600.00	\$12.00	\$111,600.00
11	Railroad Flagging	LS	1.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00
	Base Estimate (Items Nos. 1-11)			1	\$2,611,100.00		\$3,838,600.00
	30% Contingency				\$783,330.00		\$1,151,580.00
	5% Permits				\$130,555.00		\$191,930.00
	25% Design & Construction Management				\$652,775.00		\$959,650.00
	GRAND TOTAL				\$3,394,430.00		\$4,990,180.00

				ESTIMA	ATE (low)	ESTIM/	NTE (high)
Item	Description	Unit	Quantity	Unit Price	Amount	Unit Price	Amount
Option B							
1	Bridge Structure	SF	8,250.00	\$200.00	\$1,650,000.00	\$400.00	\$3,300,000.00
2	Cast-in-place retaining wall and walkway concrete	CY	478.00	\$500.00	\$239,000.00	\$500.00	\$239,000.00
3	Reinforcing Rebar	LB	95,600.00	\$1.00	\$95,600.00	\$1.00	\$95,600.00
4	Bridge Rail (on MSE)	LF	810.00	\$75.00	\$60,750.00	\$75.00	\$60,750.00
5	Drilled Shafts	LF	1,600.00	\$250.00	\$400,000.00	\$250.00	\$400,000.00
6	Lighting (assume 12 luminairs @\$ 5000)	LS	1.00	\$60,000.00	\$60,000.00	\$60,000.00	\$60,000.00
7	Drainage (to City system)	LS	1.00	\$15,000.00	\$15,000.00	\$15,000.00	\$15,000.00
8	Railroad Flagging	LS	1.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00
	Base Estimate (Items Nos. 1-8)		1/2	- N	\$2,620,350.00		\$4,270,350.00
	30% Contingency				\$786,105.00		\$1,281,105.00
	5% Permits	4		-20	\$131,017.50		\$213,517.50
	25% Design & Construction Management			_ 1B	\$655,087,50		\$1,067,587.50
	GRAND TOTAL				\$3,406,455.00		\$5,551,455.00

				ENGINEER'S ESTIMATE (low)		ENGINEER'S ESTIMATE (high)	
tem	Description	Unit	Quantity	Unit Price	Amount	Unit Price	Amount
Option B w/MSE walls							
1	Bridge Structure	SF	1,375.00	\$200.00	\$275,000.00	\$400.00	\$550,000.00
2	MSE wall	SF	33,500.00	\$25.00	\$837,500.00	\$30.00	\$1,005,000.00
3	Abulment wail & walkway	CY	250.00	\$500.00	\$125,000.00	\$500.00	\$125,000.00
4	Reinforcing Rebar	LB	10,000.00	\$1.00	\$10,000.00	\$1.00	\$10,000.00
5	Bridge Rail (on MSE)	LF	1,910.00	\$75.00	\$143,250.00	\$75.00	\$143,250.00
6	Drilled Shafts	LF	400.00	\$250.00	\$100,000.00	\$250.00	\$100,000.00
7	Lighting (assume 12 luminairs @\$ 5000)	LS	1.00	\$60,000.00	\$80,000.00	\$60,000.00	\$60,000.00
8	Drainage (to City system)	LS	1.00	\$15,000.00	\$15,000.00	\$15,000.00	\$15,000.00
9	Structural fill	CY	20,000.00	\$15.00	\$300,000.00	\$20.00	\$400,000.00
10	Railroad Flagging	LS	1.00	\$100,000.00	\$100,000.00	\$100,000.00	\$100,000.00
	Base Estimate (Items Nos. 1-10)				\$1,965,750.00		\$2,508,250.00
	30% Contingency				\$589,725.00		\$752,475.00
	5% Permits				\$98,287.50		\$125,412,50
	25% Design & Construction Management				\$491,437.50		\$627,062.50
	GRAND TOTAL				\$2,555,475.00		\$3,260,725.00

					NEER'S IMATE
tem	Description	Unit	Quantity	Unit Price	Amount
	Option C				
1	Excavation	CY	2,500.00	\$12.00	\$30,000.00
2	Pilewall	SF	23,520.00	\$150.00	\$3,528,000.00
3	Conc Facia Panel	SF	13,440.00	\$35.00	\$470,400.00
4	Roof Slab	SF	1,400.00	\$40.00	\$56,000.00
5	Slab on grade	CY	83.00	\$500.00	\$41,500.00
6	Lighting	LS	1.00	\$60,000.00	\$60,000.00
7	Orainage	LS	1.00	\$30,000.00	\$30,000.00
8	Sump Pump Liftstation	LS	1.00	\$50,000.00	\$50,000.00
9	Shoofly Track (including grade improvements)	LF	2,600.00	\$400.00	\$1,040,000.00
10	Railroad Flagging	LS	1.00	\$200,000.00	\$200,000.00
					\$0.00
	Base Estimate (Items Nos. 1-10)			19	\$5,505,900.00
	35% Contingency	line .	700		\$1,927,065.00
	5% Permits	The same of			\$275,295.00
	25% Design & Construction Management	A SUBL		Ly F	\$1,376,475.00
	GRAND TOTAL				\$7,432,965.00

		N.			NEER'S ATE (low)
ltem	Description	Unit	Quantity	Unit Price	Amount
	Option C w/excavation	P. Carlot			
1	Excavation	CY	8,000.00	\$12.00	\$96,000.00
2	Pitewall	SF	5,630.00	\$150.00	\$844,500.00
3	Conc Facia Panel	SF	3,940.00	\$35.00	\$137,900.00
4	Roof Slab	SF	1,400.00	\$40.00	\$56,000.00
5	Walkway	CY	83.00	\$500.00	\$41,500.00
6	Lighting	LS	1.00	\$60,000.00	\$60,000.00
7	Drainage (to City system)	LS	1.00	\$30,000.00	\$30,000.00
8	Sump Pump Liftstation	LS	1.00	\$50,000.00	\$50,000.00
9	Shoofly Track (including grade improvements)	LF	2,600.00	\$400.00	\$1,040,000.00
10	Railroad Flagging	LS	1.00	\$200,000.00	\$200,000.00
	00 0				\$0.00
	Base Estimate (Items Nos. 1-10)				\$2,555,900.00
	35% Contingency				\$894,565.00
	5% Permits				\$127,795.00
	25% Design & Construction Management				\$638,975.00
	GRAND TOTAL				\$3,450,465.00

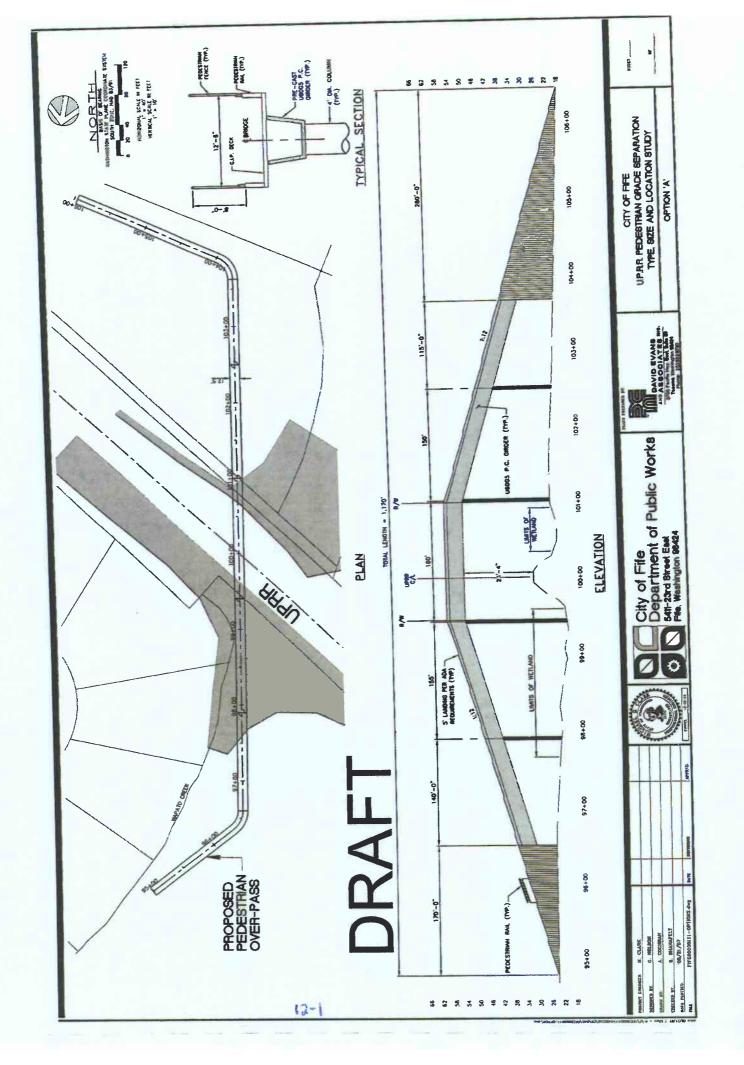
DECISION MATRIX

3	Wetland Impacts	Current Connection	Future Connection	Schedule	UPRR Preference	Public Acceptance	Maint. Cost	Construct- ability	Right-of- Way	Estimated Cost (using low A & B estimates)
Option A	0	•	•	•	•	•	0	•	0	\$3,900,000
Option A w/ MSE Walls	0	•	•	0	•		•	•	0	\$3,400,000
Option B	•	-	•	•	•	o	0	•	•	\$3,400,000
Option B w/ MSE Walls	•	_	•	0	•	o	•	•	•	\$2,600,000
Option C	0	-	•	_	2		/_	0	•	\$7,400,000
Option C w/ Excavation	0	-	·		7		_	0	•	\$3,500,000

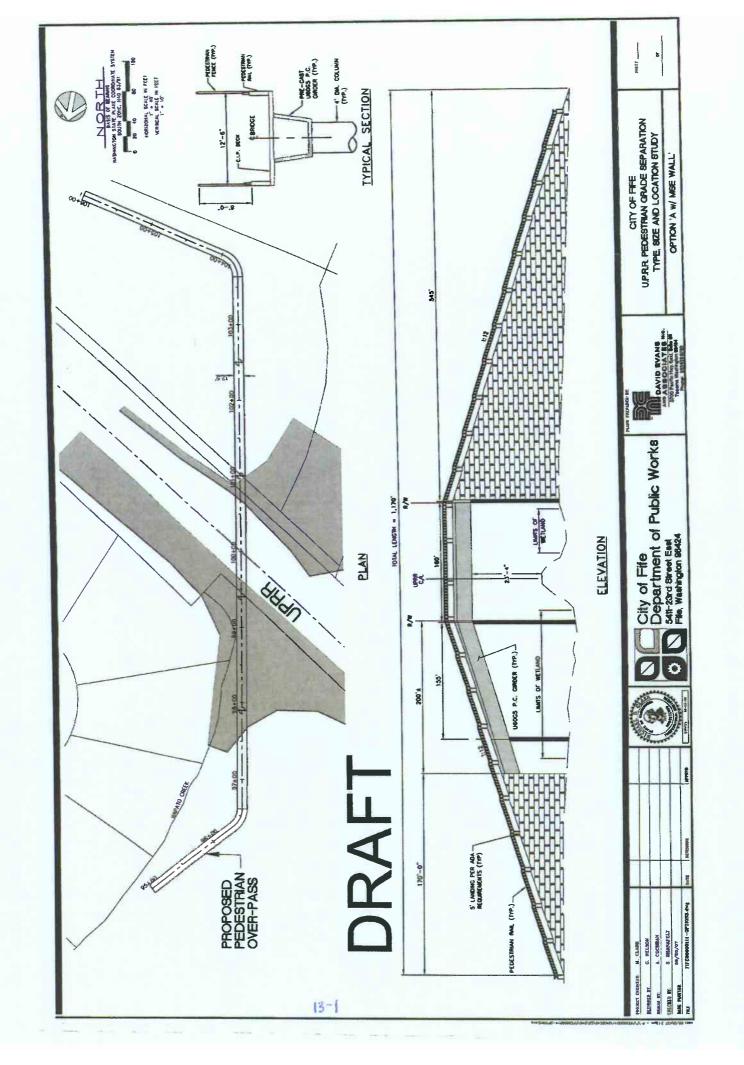
Symbols Legend	
Good	2
Better	0
Best	

^{*} The estimated cost of this option does not include the cost of completing the necessary portions of the planned Fife Sports Complex Trail that are needed to provide connectivity to the street network.

OPTION A

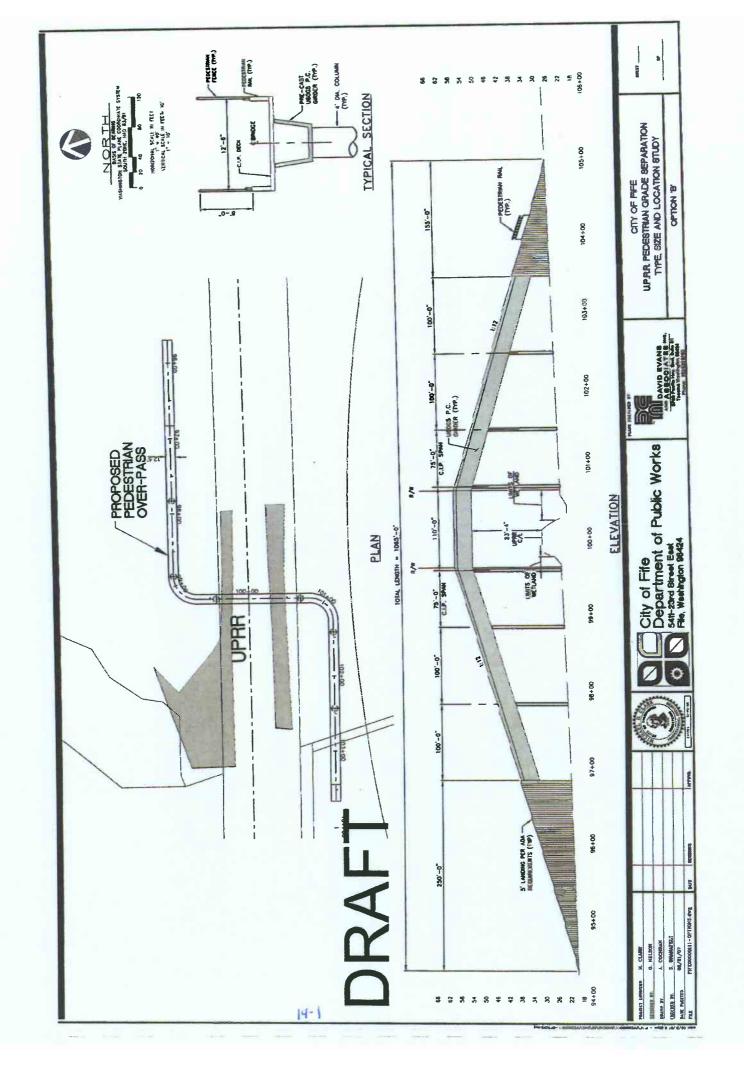


OPTION A WITH MSE WALL

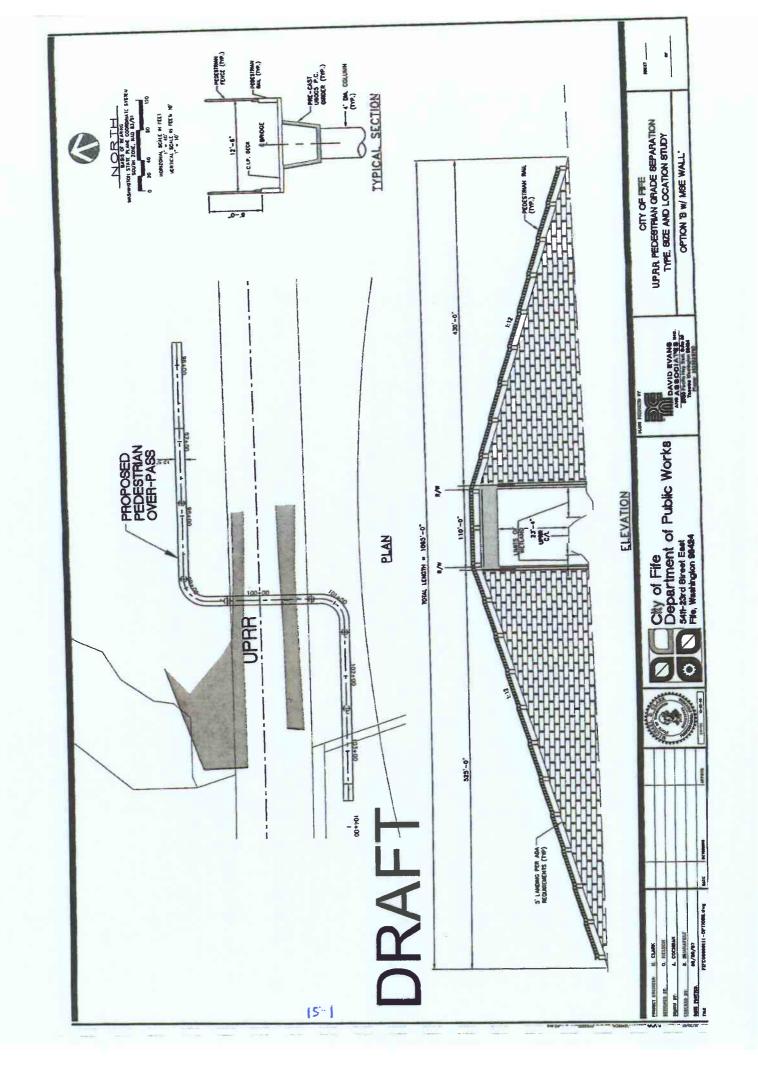


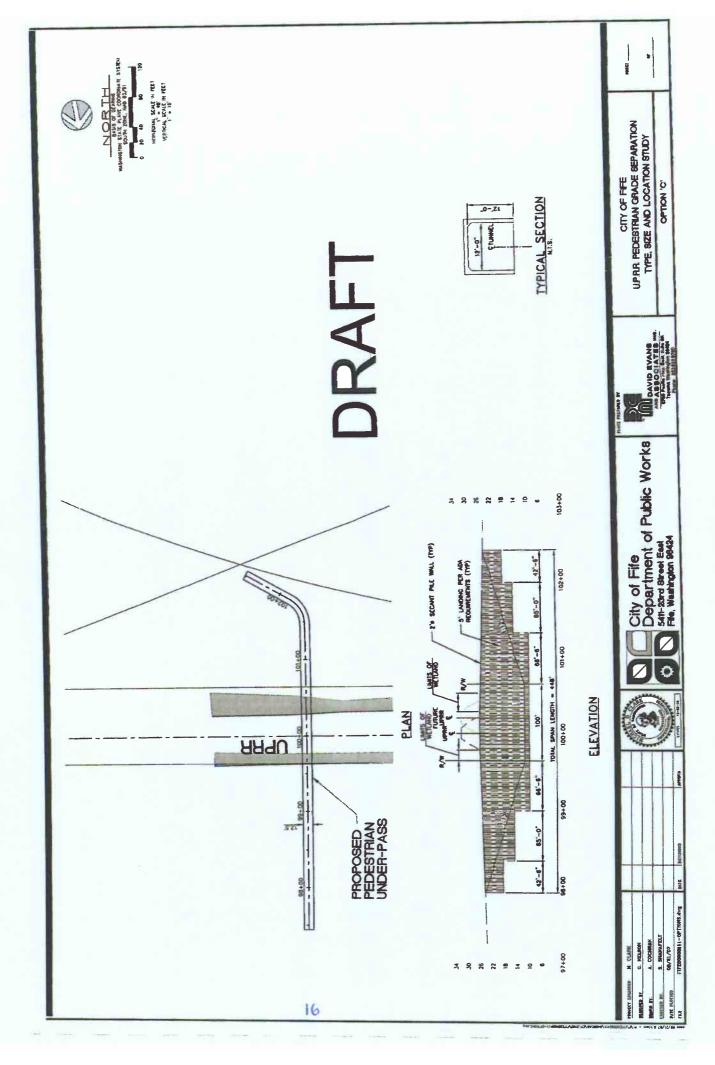
OPTION B

14

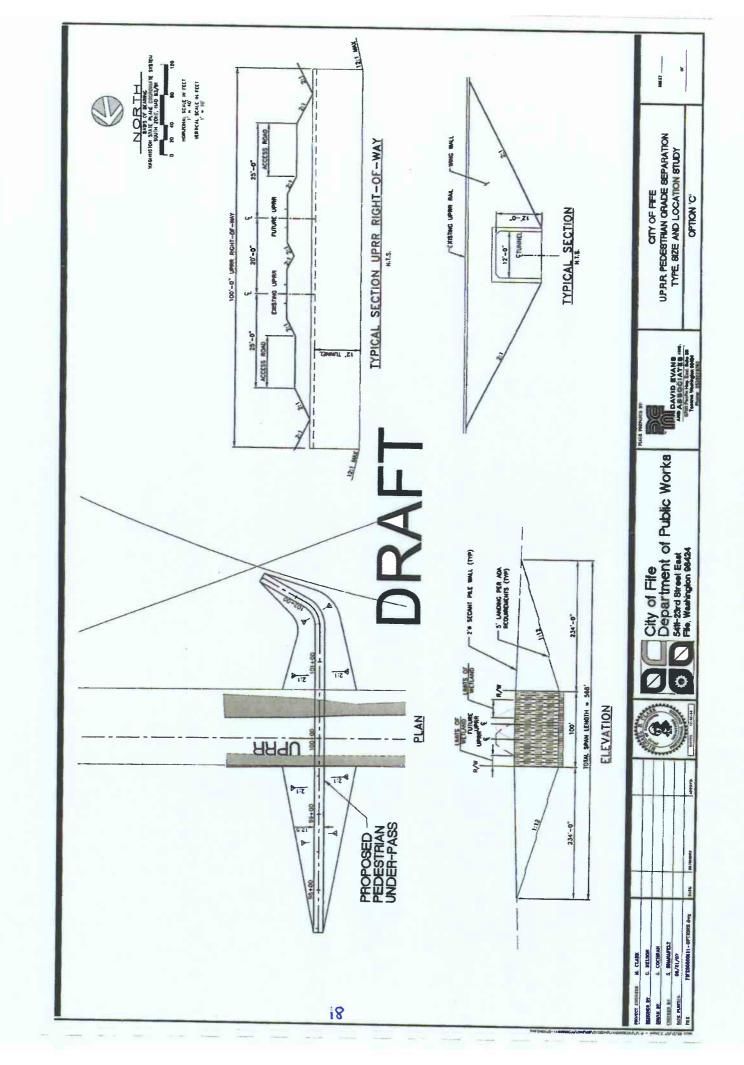


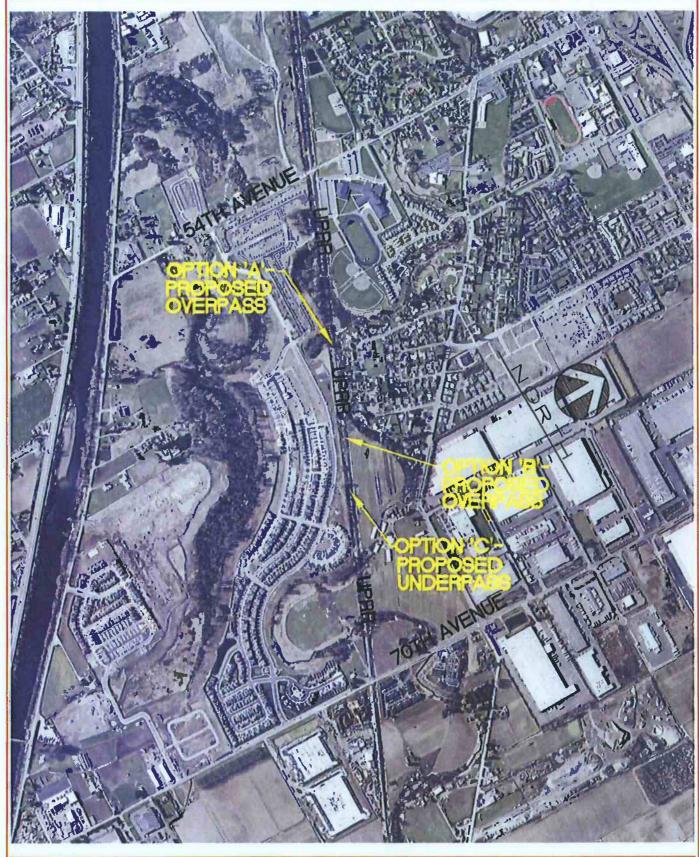
OPTION B WITH MSE WALL





OPTION C TUNNEL









DAVID EVANS

3700 Pacific Hey. East, Suite 31 Tecoma Washington 96424 Phone: 263 922 9780 UNION PACIFIC RAILROAD 54TH AVE TO 70TH AVE PAPE, WASHINGTON