

City of Ferndale Public Works Department

Thornton Street Over BNSF Railroad Bridge

Type, Size, & Location Report

**Final
February 2, 2015**



SHEARER DESIGN LLC.

Bridge Design, Construction Engineering and Infrastructure Aesthetics
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Thornton Street Over BNSF Railroad Bridge

Bridge TS&L Report

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Executive Summary

The City of Ferndale proposes to construct a new bridge to carry Thornton Street over the Burlington Northern Sante Fe (BNSF) railroad. The new bridge will provide access between Malloy Avenue and the Portal Way roundabout which is anticipated to become a principle route for a majority of Ferndale residents living on the west side of the city. This study examines the cost and feasibility for grade separation structures on four alignments over the railroad tracks. All options include road widening the full length of the project and a single lane roundabout at the intersection of Thornton Street and Malloy Avenue.

The following four options were evaluated for a new bridge at this site. Figure 1 on the following page shows the project limits and basic layout of each option.

- **Option 1** – This alternative was developed to provide continuous traffic flow (no intersection) and minimize right of way acquisition. The bridge consists of single span precast concrete 42 inch deep WSDOT "I Girders" with a cast-in-place concrete deck. The roadway alignment provides a radius from the east-west leg to the north-south leg of Thornton Street for continuous traffic flow. Estimated cost \$23,600,000.
- **Option 2** – This alternative was developed to provide continuous traffic flow (no intersection) and maximize property available between the new road and WSDOT right of way. The bridge consists of single span precast concrete 50 inch deep WSDOT "I Girders" with a cast-in-place concrete deck. The roadway alignment provides a radius from the east-west leg to the north-south leg of Thornton Street for continuous traffic flow (no intersection). Estimated cost \$27,480,000.
- **Option 3** – This alternative was developed to simplify future road extension to the north and east and allow possible development of land between the new road and WSDOT right of way. The bridge consists of single span precast concrete 42 inch deep WSDOT "I Girders" with a cast-in-place concrete deck. The north-south leg of the roadway is located as far west as possible without requiring extensive retaining walls and without encroaching on BNSF right of way. Estimated cost \$27,840,000.
- **Option 4** – This alternative was developed to simplify future road extension to the north and east and allow for future development of land between the new road and BNSF right of way. The bridge consists of single span precast concrete 42 inch deep WSDOT "I Girders" with a cast-in-place concrete deck. The north-south leg of the roadway is located as far east as possible without encroaching on WSDOT right of way. Estimated cost \$27,260,000.

Option 1 is recommended for development to final design.

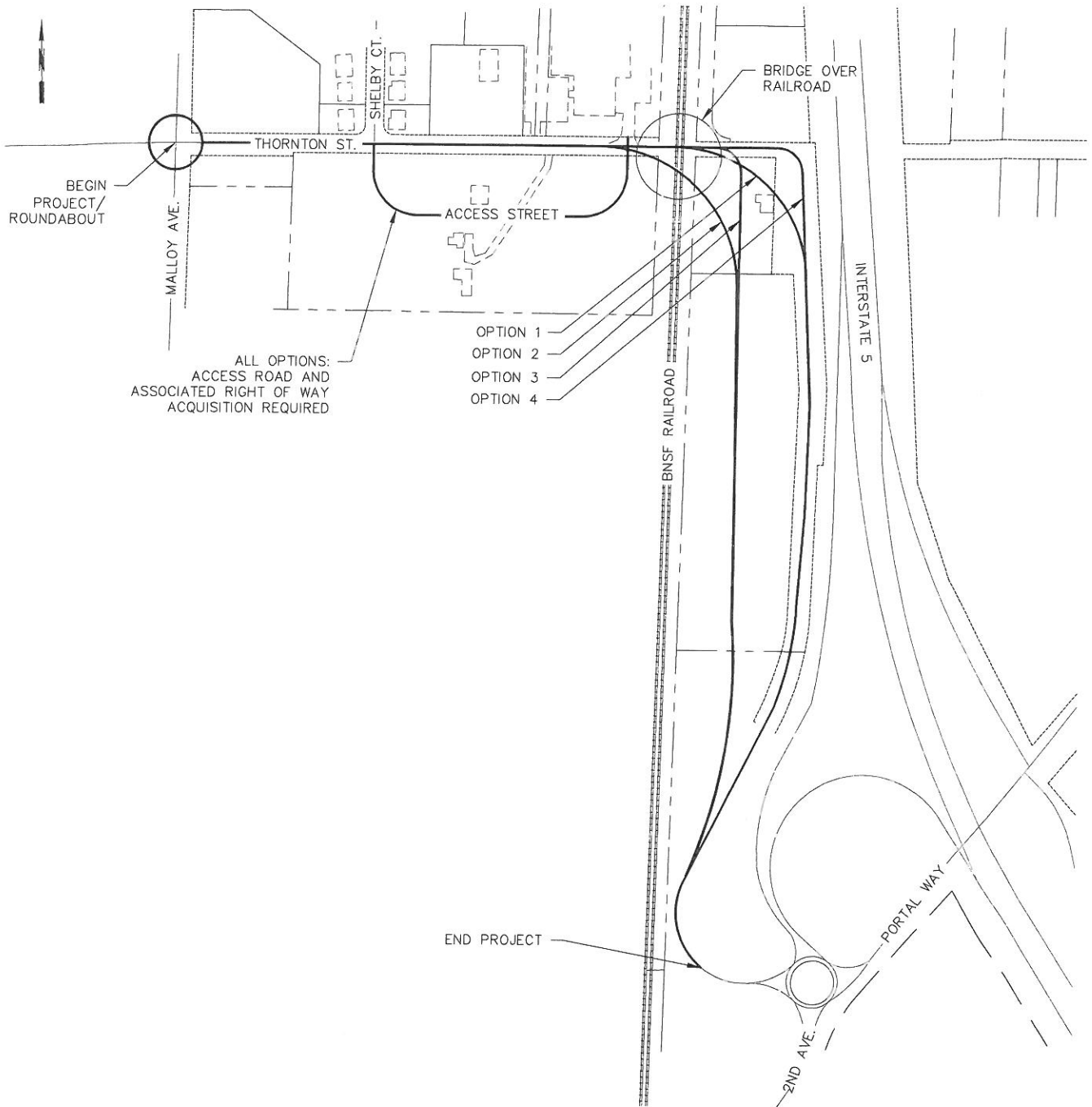


FIGURE 1: OPTIONS SUMMARY

**CONCEPT
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Thornton Street Overcrossing BNSF Railroad
Ferndale, WA

OPTIONS SUMMARY

SHEET

Fig. 1 OF —

FILE NO. SD-0263

Project Background

The City of Ferndale is proposing to construct a new bridge that carries Thornton Street over the Burlington Northern Santa Fe (BNSF) railroad. Barricades currently block Thornton Street traffic from crossing the railroad tracks at grade in both directions. The new bridge will provide access between Malloy Avenue and the Portal Way roundabout which is anticipated to become a principle route for a majority of Ferndale residents living on the west side of the city.

This study examines the cost and feasibility for grade separation structures on four alignments. All options use earth fill approaches contained by structural earth walls (SEW), with a single-span bridge over the BNSF right of way. Detailed geotechnical investigation has not yet occurred. Consequently, drilled shaft foundations have been conservatively assumed.

Roadway improvements include widening existing Thornton Street between Malloy Avenue and the BNSF tracks by adding adequate shoulders, curb, gutter and sidewalk to both sides of the road. The full-width improvements carry over the bridge to the east where this new section replaces the existing gravel road south to the roundabout at Portal Way. All options include a single lane roundabout at the intersection of Thornton Street and Malloy Avenue.

The walls used to contain the bridge approach fill west of the railroad block access to the Samson Rope property; therefore, a new access street is proposed. The access connects to the south side of Thornton Street across from Shelby Court and connects to the eastern existing Samson Rope driveway via a penetration through the bridge approach walls.

Location

The BNSF overpass is located in the City of Ferndale approximately 0.25 miles east of Malloy Avenue on Thornton Street. The BNSF tracks run north and south. This project improves the existing east-west leg of Thornton Street, constructs a new bridge over the tracks replacing the existing at-grade crossing, and constructs a new north-south leg of Thornton Street replacing the existing gravel road between the railroad tracks and Interstate 5 and connects to the existing roundabout at Portal Way.

Site Description

Existing Thornton Street consists of two paved lanes and narrow shoulders. The project site is bounded on the west by Malloy Avenue and on the east by Interstate 5. On the north, Thornton Street is bounded by a mix of developed residential and industrial properties. On the south, Thornton Street is bounded by properties zoned commercial that currently consist of a mix of residential properties and grass fields with trees and larger open areas. The south end of the project terminates at the roundabout at Portal Way. The terrain in the south and east is generally flat and rises in elevation to the west.

Drainage

The current roadway surface drainage on Thornton Street west of the railroad tracks flows off the shoulders into roadside ditches which flow easterly to a pond west of the tracks. The current roadway surface drainage on the gravel road east of the railroad tracks flows off the shoulders with no established runoff collection system. It is expected that the storm drainage system will be replaced as part of this project.

Utilities

Overhead power and communication lines run east-west along Thornton Street between Malloy Avenue and the residences and industrial building. It is assumed that water and potentially sewer services also connect to these residences. It is our understanding that the existing water line terminates just west of the railroad tracks and that future extension of that line is planned for construction in 2015 or 2016 as available funding allows. Costs for water line improvements within the project limits are included in this project; however, costs for the full water line extension under I-5 to the east are not included.

Right of Way

The project site is bordered by City right of way on the west side at Malloy Avenue and on the east side by WSDOT right of way along Interstate 5.

From Malloy Avenue to the WSDOT right of way, the east-west leg of Thornton Street right of way is 50 feet wide. Adjacent to the WSDOT right of way, the north-south leg of Thornton Street right of way varies from about 107 feet at the north to about 133 feet over about 310 feet heading south, then necks down to 75' for the remainder of the project site.

The BNSF right of way is about 100' wide and bisects the project site about 0.25 miles east of Malloy Avenue. The two tracks are located at about 49 feet and 64 feet from the west edge of the BNSF right of way.

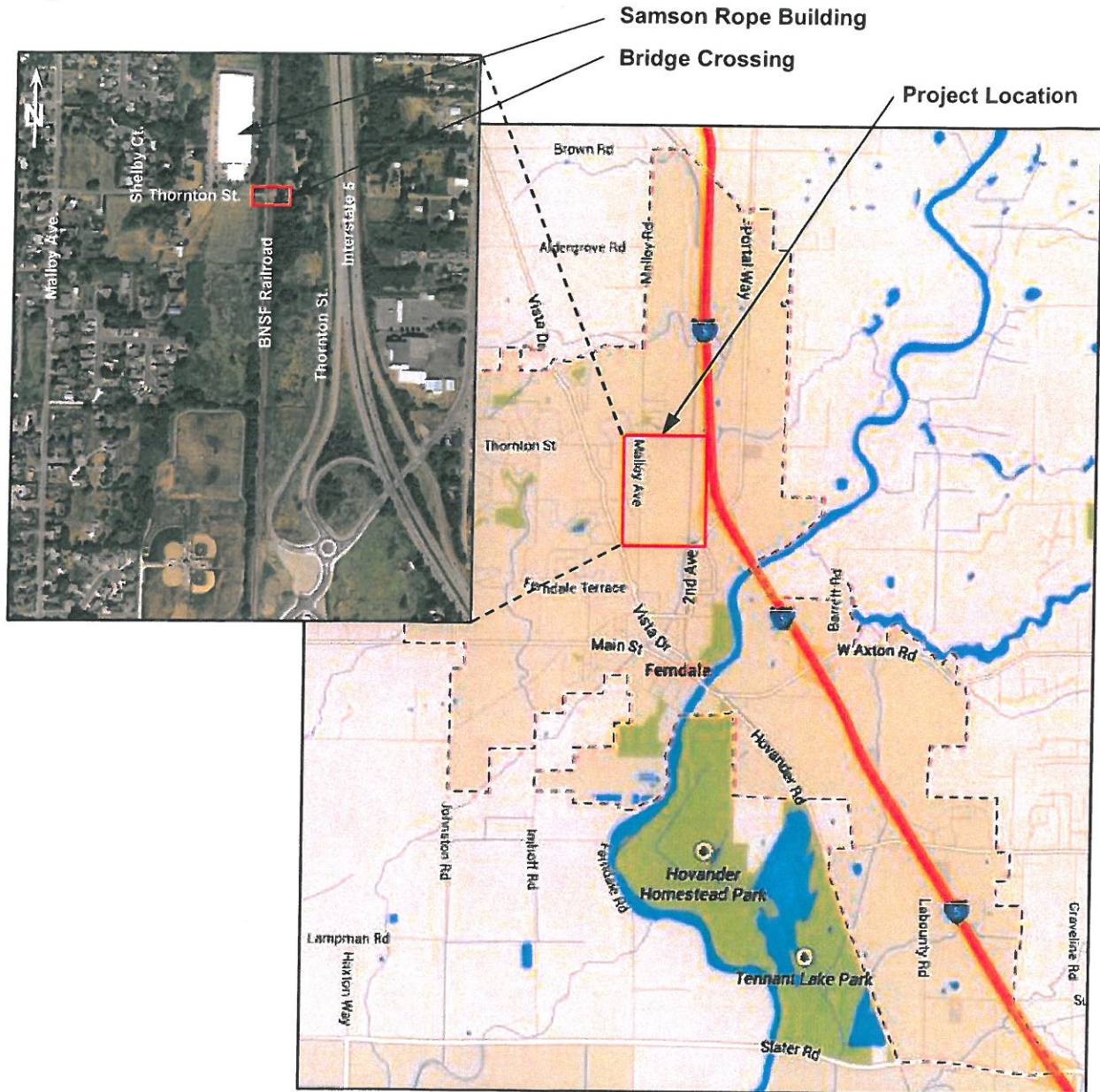


FIGURE 2: PROJECT LOCATION

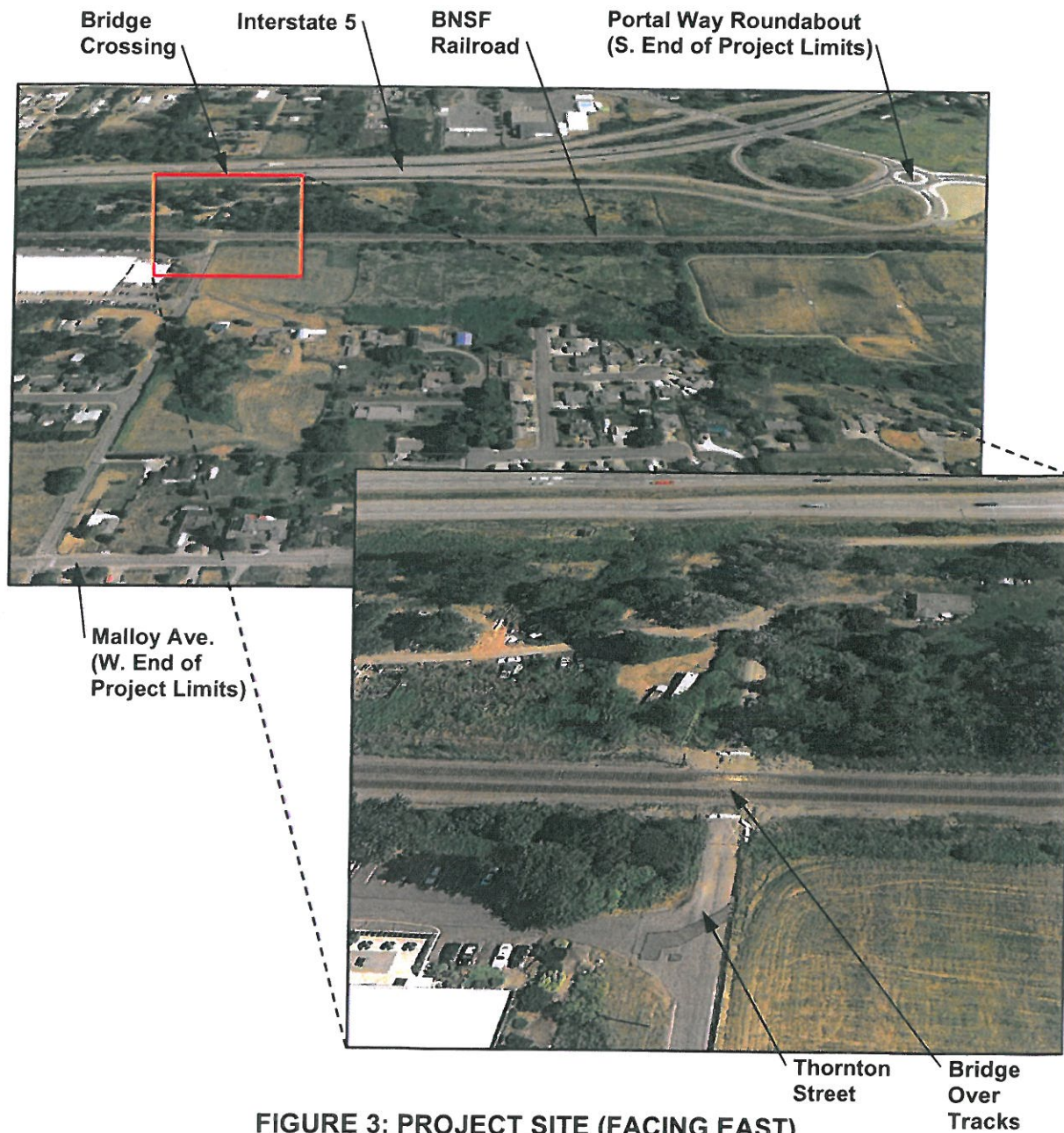


FIGURE 3: PROJECT SITE (FACING EAST)

Key Considerations

Site Issues

The following key site issues were considered during evaluation of options for this new structure:

- Bridge length
- Wall requirements
- Impacts to existing properties
- Right of way requirements
- Access to Samson Rope property west of the railroad tracks and north of Thornton Street
- Wetland impacts
- Railroad requirements
- Traffic flow
- Future road extension to north and east
- Cost

Design Criteria

The project specific criteria that have been used for this report are:

Roadway and Bridge Design Criteria

- Live Load: HL-93
- Typical Bridge Section
 - Out to out width: 45'-9" (Options 1, 3 & 4), 60'-0" (Option 2)
 - Lanes: Two 12'-0" lanes
 - Shoulders: 5'-0", both sides (Options 1, 3 & 4), Varies 5'-0" min. (Option 2)
 - Sidewalk: 5'-0", both sides
- Design Code
 - AASHTO LRFD Bridge Design Specifications 6th Edition
 - BNSF Railway – Union Pacific Railroad Guidelines for Railroad Grade Separation Projects

Railroad Requirements

BNSF requires approval of the design for bridges over their tracks. The following items are required for design and construction of the proposed bridge:

BNSF Review and Approval:

The railroad will review and approve the bridge design at the conceptual, 30% and 100% milestones. The concept submittal must include plans and site pictures. The 30% and 100% submittals must include plans, specifications, drainage report (if needed) and construction phasing plans.

The railroad typically requires direct communication with the bridge owner (the City). However, Shearer Design is available to assist the owner by drafting documents, attending meetings, reviewing comments and providing general guidance.

Once the final submittal has been approved, the City will enter into an agreement with the railroad allowing construction of the bridge over the tracks.

During construction, the railroad will review and approve construction work inside the right of way and over the tracks, including falsework, demolition, erection, erosion control and construction phasing. Inspection reports and quality control documents must be furnished to the railroad. The railroad will periodically inspect the work site and requires final acceptance prior to contractor demobilization.

Vertical clearance:

23'-4" minimum, measured from the top of rail of the present track. 23'-6" is used for design to allow for re-ballasting and leveling of the existing track.

Horizontal clearance:

The nearest face of the overpass structure is typically limited to no closer than 25'-0" from the centerline of the nearest track. The absolute minimum horizontal clearance is 18'-0" and requires special review and approval by BNSF. Any horizontal clearance less than 25'-0" requires a crash wall.

During construction, equipment and temporary structures (e.g. shoring) near the tracks will be limited to no closer than 15 feet horizontally from the centerline of the nearest track and 21'-10" vertically from the top of the tracks.

Railroad shut down windows:

Moving equipment across the existing railroad tracks and setting of girders will have to be coordinated with specific railroad shut down periods or work windows.

Barrier and Projectile Fence:

BNSF requires a concrete barrier without openings and fence that extends horizontally 25'-0" beyond the centerline of the outside track or the railroad right of way, whichever is greater. The minimum combined barrier and fence height shall be 8 feet for a curved fence or 10 feet for a straight fence.

Design Assumptions

This report has been prepared using the following design assumptions:

- Single-span bridge with all permanent structural components outside of the railroad right of way
- Drilled shaft bridge foundation
- Earthen approaches faced by structural earth walls (SEW) where needed to keep roadway side slopes from encroaching on BNSF right of way or WSDOT right of way.
- Utilities in the vicinity include water, sewer, electricity and communication to the adjacent properties.
- Costs include 20% contingency, 18% for construction engineering, 25% for design engineering and 5% inflation per year to increase estimates from 2014 to 2016 dollars.
- Right of way acquisition costs are based on unit prices provided by the City.

Foundation Evaluation

Geotechnical investigations have not yet been performed for this project. It is assumed that typical foundation types, spread footings, driven piles or drilled shafts, will be applicable. For this report, which reflects planning level costs, drilled shaft foundations have been conservatively assumed.

Constructability

All options evaluated for this study are considered "standard" DOT bridges and local contractors are familiar with the details and types of equipment required. However there are a few items that are site specific that need to be identified for construction of the bridge.

Skew

- Option 1: Due to the roadway curve beginning on the bridge, a slight skew is induced at the eastern pier. However, the skew is minor and should not affect the span or choice of girder. The bridge could be constructed straight, without skew, to simplify future extension to the east if needed, which would require a slightly wider bridge.
- Option 2: In this option the bridge is entirely in the curve and the angle at which the curve crosses the railroad creates a large skew in the bridge. The longer span needed to cross the BNSF right of way at this skew requires a deeper girder and wider bridge than the other options.
- Options 3 and 4: The bridge is straight for these options creating no skew.

Railroad Construction Requirements

Railroad shut down windows: Moving equipment across the existing railroad tracks and setting of girders will have to be coordinated with specific railroad shut down periods or work windows.

Railroad construction clearances: During construction, equipment and temporary structures (e.g. shoring) near the tracks will be limited to no closer than 15 feet horizontally from the centerline of the nearest track and 21'-10" vertically from the top of the tracks.

Detour Route and Property Access

Since barricades currently block Thornton Street access across the railroad tracks, it is assumed that a detour will not be needed. Construction of the bridge and approaches will require periodic partial closure of Thornton Street on both sides of the railroad tracks. However, access to all properties will be maintained during construction.

Future Road Extension

Fill for the approach to the bridge east of the railroad will block access to several undeveloped properties located north of Thornton Street and between the railroad and Interstate 5. In order to provide access to these properties, an additional access road, driveway and/or penetration through the new fill will be needed. This work is not included in this report.

The City currently has long-term plans for extension of Thornton Street to the east over Interstate 5. This will require construction of a relatively large bridge over I-5 and coordination with WSDOT. This work is not included in this report.

The feasibility of future extension of Thornton Street to the north and east has been considered in the development of the four options included in this report. Options 3 and 4 allow for the simplest future extension, requiring minimal modifications to the improvements shown. Options 1 and 2 also allow for future extension of the roadway, however, they require more extensive modification of the proposed improvements.

Options Considered

Four options were considered. Options 1 and 2 carry Thornton Street on a 375' radius for continuous traffic (no intersection) and each option requires a unique bridge. Options 3 and 4 carry Thornton Street via a roughly 90 degree intersection and each of these options can use the same bridge. The result is that four alignment options and three bridge options were considered.

Common Items

All options include the following:

- Earthen approaches faced by structural earth walls (SEW). Wall length is based on the vertical profile shown on the attached plans with a maximum longitudinal road grade between 5.25% and 7.75% and roadway side slopes of 3H:1V.
- Access to the Samson Rope property will be by portal through the structural earth wall. A new access road will be constructed connecting Thornton Street to the portal.
- Bridges will provide a single clear span over the BNSF right of way in accordance with BNSF preference that all bridge components remain outside of their right of way.
- All bridge span options consist of precast concrete girders. Bridge span options differ in the number and depth of girders.
- The bridge is supported by columns and drilled shafts independent of the earthen approach. An approach slab will act as a link span connecting the approaches to the bridge.
- Single lane roundabout at the intersection of Thornton Street and Malloy Avenue.

Other Options Considered

During our initial evaluation options were considered other than those detailed in this report but deemed too costly or unlikely to receive BNSF approval to pursue. These included:

- Lengthening the single span bridges or adding an additional span for access to the Samson rope property.
- Curved or straight steel girders for Option 2.
- Decreasing bridge spans to provide 25'-0" clearance from centerline of tracks and placing end piers inside BNSF right of way.

Option 1: Radius East*Cost Estimate: \$23,600,000*

Rationale: This alternative was developed to provide continuous traffic flow (no intersection) and minimize right of way acquisition.

Description: The roadway utilizes a 375' radius with a 6% superelevation to accommodate continuous traffic flow (no intersection) and is located as far east as possible without encroaching on WSDOT right of way. The bridge is a 118 foot single span precast concrete girder bridge with a composite concrete deck. The girders are 42 inches deep. The roadway curve is partly on the bridge structure which the bridge accommodates by chording girders across the curve and slightly skewing the girder ends and eastern pier. The structural earth wall (SEW) approaches total 850 feet with a maximum wall height of about 34 feet. The total project length of the SEW approaches and the bridge is 972 feet.

Option 1: Pros & Cons

Pros	Cons
Least right of way acquisition of all options (unless extensive walls are constructed in Option 4)	Alignment directly conflicts with existing building on inside of radius. Right of way acquisition needed for this property.
Least wetland impact of all options (unless extensive walls are constructed in Option 4)	Radius complicates future road extension to the north and east.
Maximize the area between the new road and the railroad right of way along the north-south leg	Bridge option more costly compared to the intersection options, Options 3 and 4
Least cost of all options	
Radius provides better traffic flow compared to Options 3 and 4	

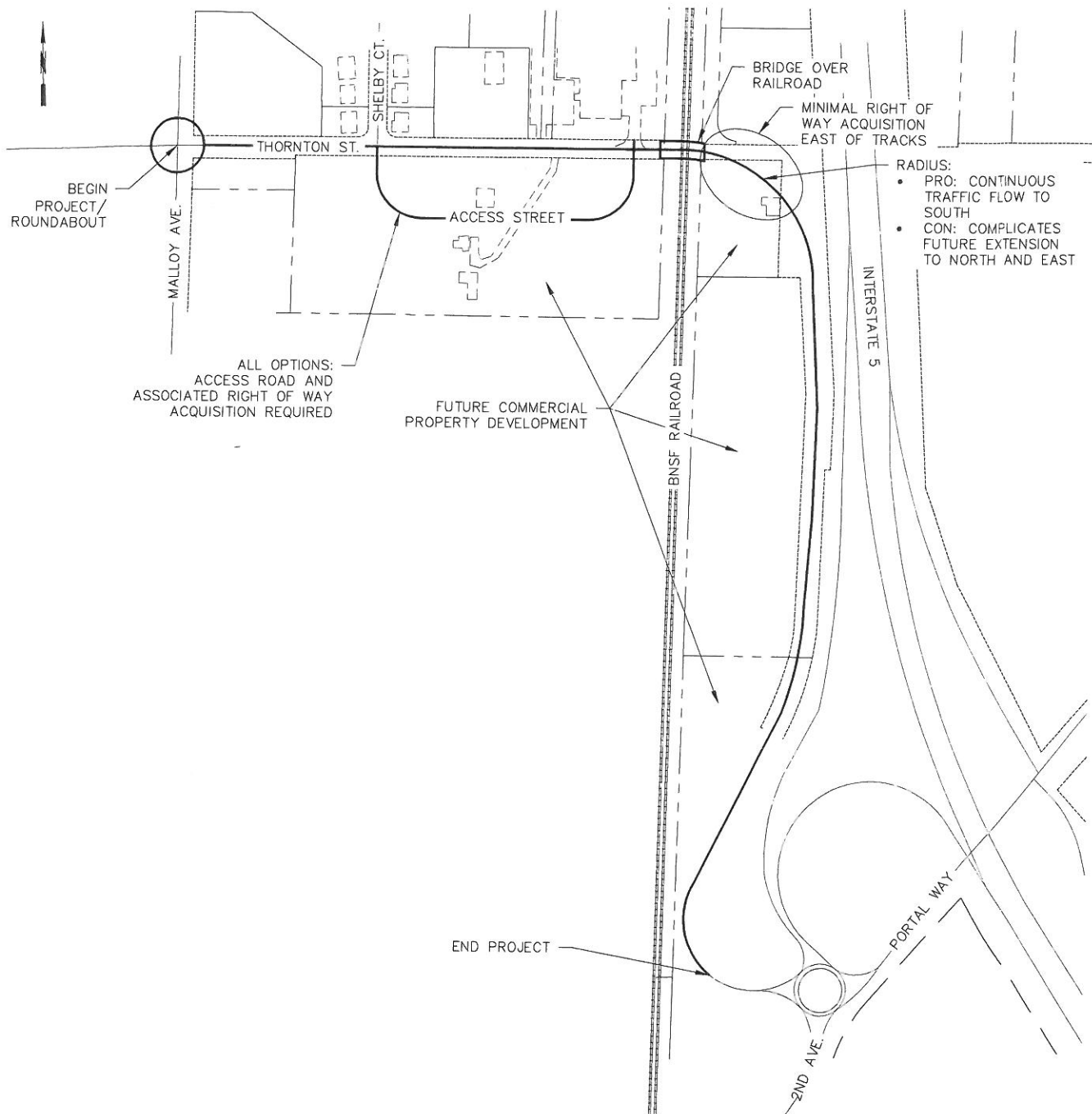


FIGURE 4: OPTION 1 SUMMARY PLAN

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Ferndale, WA

OPTION 1 SUMMARY

SHEET

Fig. 4 OF -

FILE NO. SD-0263

Option 2: Radius West

Cost Estimate: 27,480,000

Rationale: This alternative was developed to provide continuous traffic flow (no intersection) and maximize property available between the new road and WSDOT right of way.

Description: Similar to Option 1, the roadway utilizes a 375' radius with a 6% superelevation to accommodate continuous traffic flow (no intersection). However, this option is located as far west as possible without encroaching on BNSF right of way. The bridge is a 142 foot single span precast concrete girder bridge with a composite concrete deck. The girders are 50 inches deep. The roadway curve is fully on the bridge structure which the bridge accommodates by chording girders across the curve and skewing girder ends. Both piers are highly skewed. The structural earth wall (SEW) approaches total 860 feet with a maximum wall height of about 36 feet. The total project length of the SEW approaches and the bridge is 1,006 feet.

Option 2: Pros & Cons

Pros	Cons
Corridor adjacent to WSDOT right of way available for future development	More right of way acquisition needed than for options pushed to the east, Options 1 and 4 (similar acquisition as Option 3)
Existing building east of the new road is not directly affected	More wetland impacts than for options pushed to the east, Options 1 and 4
Radius provides better traffic flow compared to Options 3 and 4	Slightly deeper superstructure requires larger approaches
	Complex bridge geometry results in most costly bridge option.
	Radius complicates future road extension to the north and east.
	Significantly higher cost than Option 1

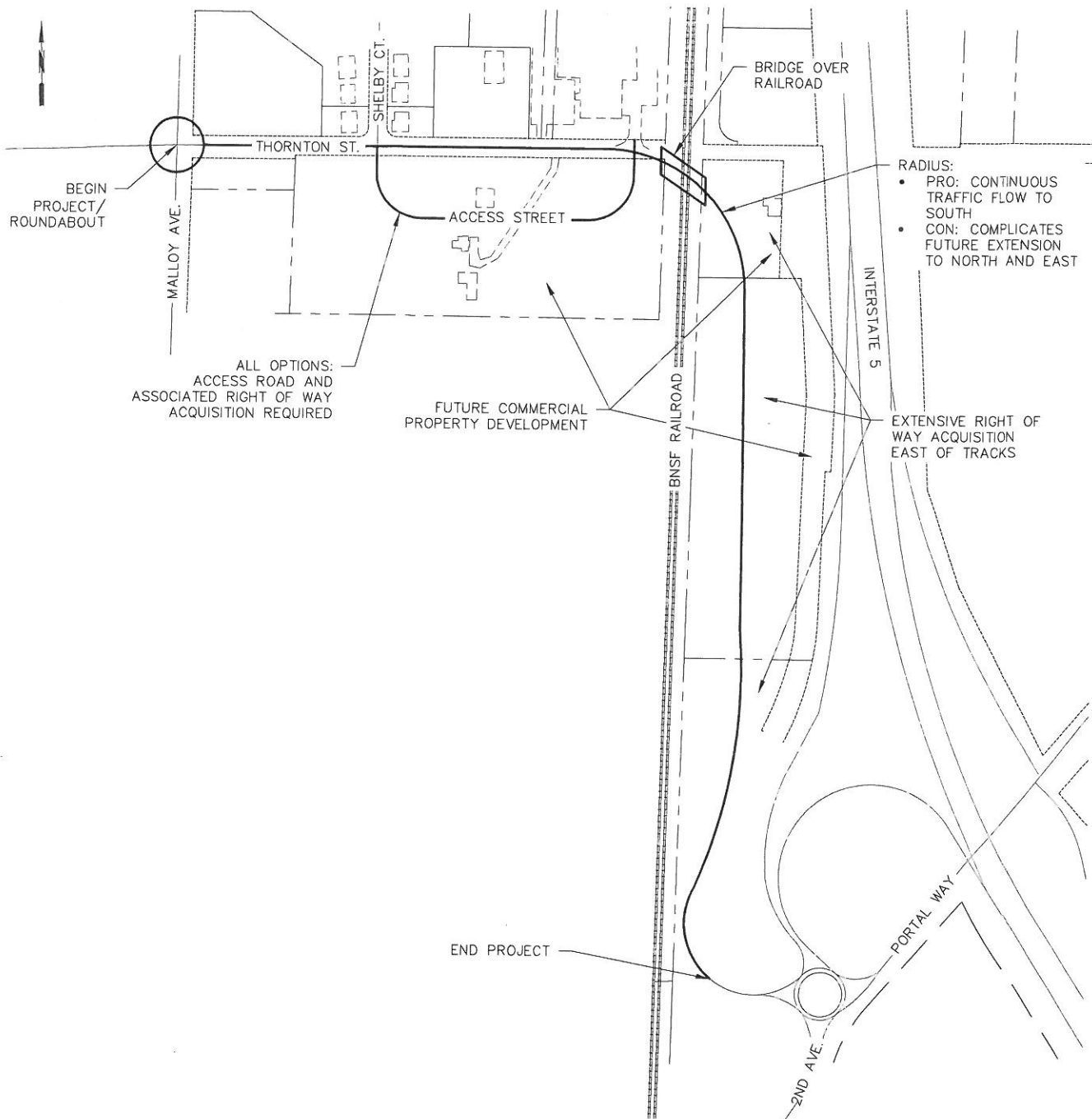


FIGURE 5: OPTION 2 SUMMARY PLAN

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Ferndale, WA

OPTION 2 SUMMARY

SHEET

Fig. 5 OF -

FILE NO. SD-0263

Option 3: Intersection West

Cost Estimate: \$27,840,000

Rationale: This alternative was developed to simplify future road extension to the north and east and allow possible development of land between the new road and WSDOT right of way.

Description: This option provides an intersection that more easily allows for future road extension to the north and/or east compared with Options 1 and 2. The intersection is located as far west as possible without needing extensive retaining walls and without encroaching on railroad right of way. The bridge is a 118 foot single span precast concrete girder bridge with a composite concrete deck. The girders are 42 inches deep. There is no skew required for this bridge option. The structural earth wall (SEW) approaches total 850 feet with a maximum wall height of about 32 feet. The total project length of the SEW approaches and the bridge is 972 feet.

An alternative to Option 3 was considered that extends the walls along the east side of the south leg of Thornton Street in order to reduce the extent of roadway fill and maximize the usable area between the road and WSDOT right of way. This also eliminates direct impact to the building east of the new road. If used, the cost of additional walls raises the total cost of Option 3 by about \$570,000, which would bring the total cost to \$28,410,000.

Option 3: Pros & Cons

Pros	Cons
Future road extension and development to the north and east	More right of way acquisition required than for options pushed to the east, Options 1 and 4 (similar acquisition as Option 2)
Least costly bridge structure (tied with Option 4)	Most wetland impacts of all options
	Side slopes encroach on much of the usable space between the new road and WSDOT right of way unless more extensive walls are constructed
	Directly affects the existing building east of the new road unless more extensive walls are constructed
	Highest cost of all options.
	Reduces traffic flow compared to Options 1 and 2

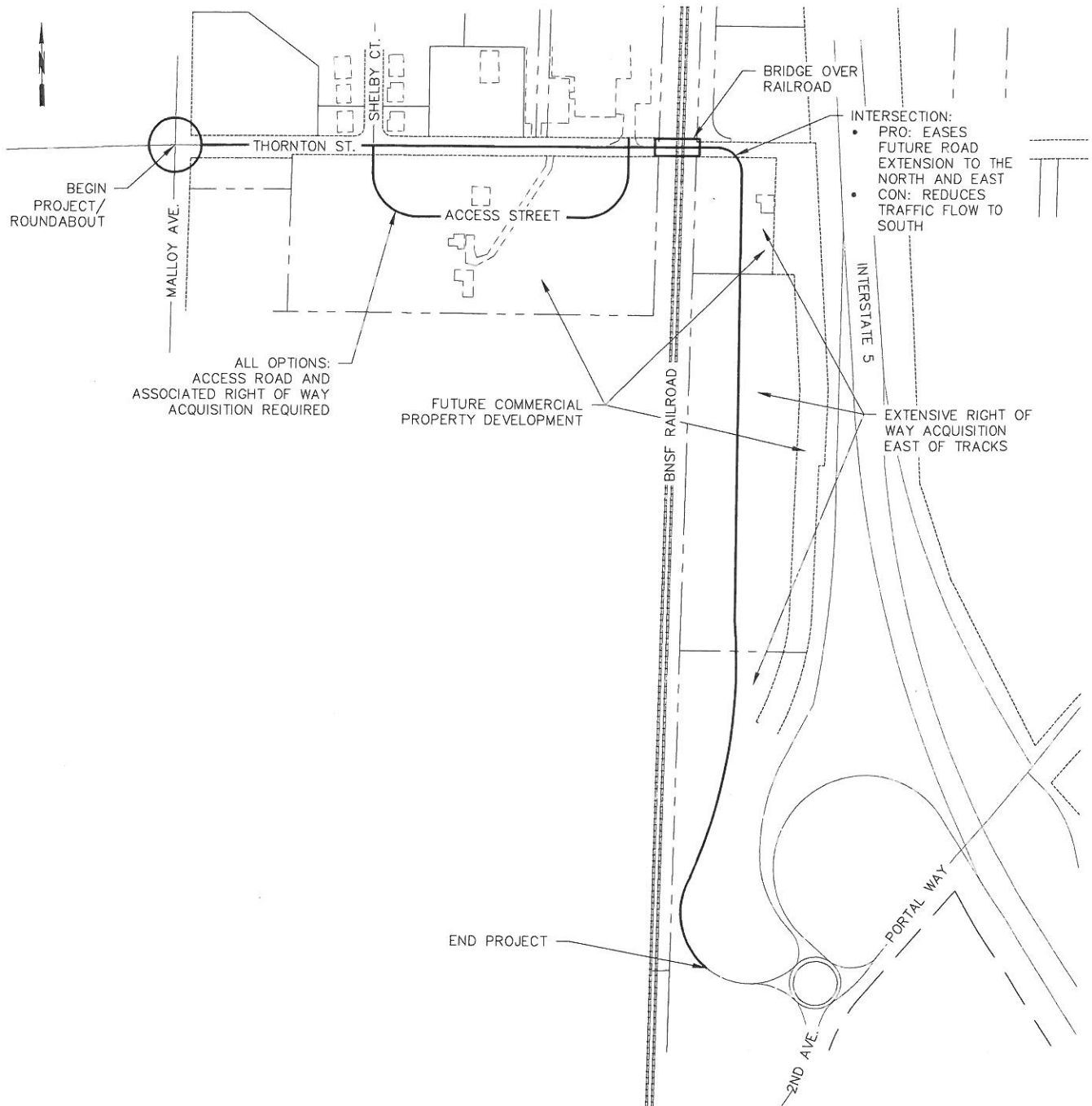


FIGURE 6: OPTION 3 SUMMARY PLAN

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OPTION 3 SUMMARY

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Fig. 6 OF -

FILE NO. SD-0263

Option 4: Intersection East

Cost Estimate: \$27,260,000

Rationale: This alternative was developed to simplify future road extension to the north and east and allow for future development of land between the new road and BNSF right of way.

Description: Similar to Option 3, this option provides an intersection that more easily allows for future road extension to the north and/or east. However, for this option the intersection is located as far east as possible without encroaching on WSDOT right of way. The bridge is a 118 foot single span precast concrete girder bridge with a composite concrete deck. The girders are 42 inches deep. There is no skew required for this bridge option. The structural earth wall (SEW) approaches total 1,492 feet with a maximum wall height of about 32 feet. The total project length of the SEW approaches and the bridge is 1,614 feet.

An alternative to Option 4 was considered that extends the walls along the west side of the south leg of Thornton Street in order to maximize the usable area between the BNSF right of way and the new road. This would also eliminate direct impact to the building west of the new road. If used, the cost of additional walls is offset by decreasing roadway fill, wetland impacts and property acquisition. The result is a net decrease in the total cost of Option 4 by about \$690,000. The cost listed above is the decreased total which includes the additional walls. The cost estimate without the walls is \$27,950,000.

Option 4: Pros & Cons

Pros	Cons
Future road extension and development to the north and east	Most walls needed of all options
Least costly bridge structure (tied with Option 3)	Directly affects the existing building west of the new road unless more extensive walls are constructed
Second least right of way acquisition needed (after Option 1). It is possible that no ROW acquisition would be needed east of the railroad if more extensive walls are constructed. If the more extensive walls are constructed, this option provides for the minimum right of way impact of all options.	Significantly higher cost than Option 1
Second least wetland impacts (after Option 1). If more extensive walls are constructed, this option provides the minimum wetland impact of all options.	Reduces traffic flow compared to Options 1 and 2
Possible future development of properties between the new road and the railroad.	

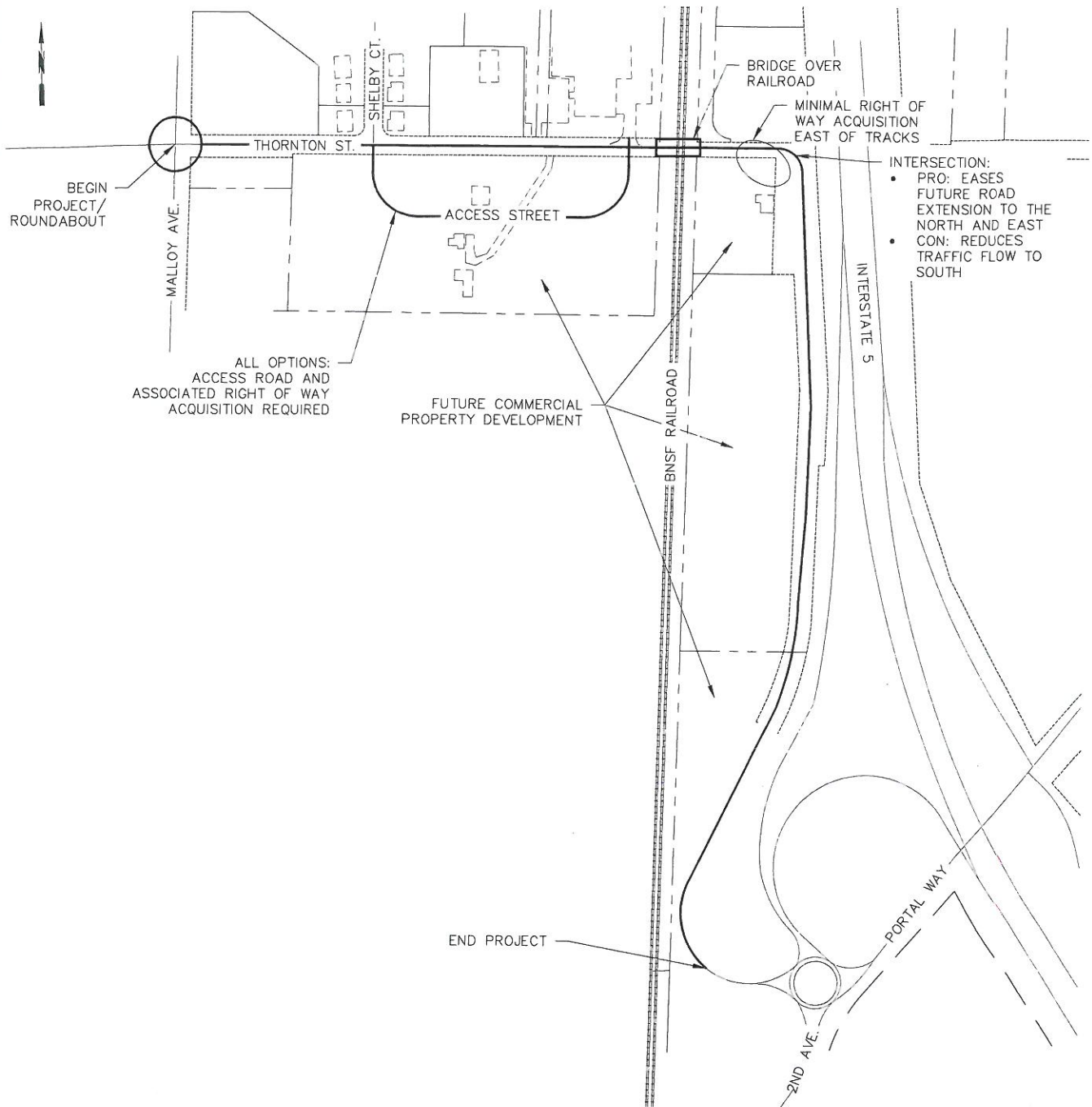


FIGURE 7: OPTION 4 SUMMARY PLAN

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OPTION 4 SUMMARY

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Fig. 7 of —

FILE N.O. SD-0263

Cost Estimates

Cost estimates prepared for this study are compiled from a number of sources. The probable estimated construction cost is the most reasonable estimate that can be compiled given the level of design development at this time. These estimates are subject to economic conditions, bidding climate, procurement method and normal bid fluctuations at the time of project tendering.

All estimates are given in year 2016 dollars using an assumed inflation rate of 5% per year.

A 20% contingency has been added to the construction cost to allow for changes in layout, detail modifications and other uncertainties.

18% has been added to the construction cost for construction engineering and administration.

25% has been added to the construction cost for professional services needed to complete the project, including engineering and permitting.

Sales tax has not been included in the construction estimates.

Unit costs for right of way acquisition have been provided by the City and incorporated in the cost estimate.

Costs for wetland mitigation assume construction of new wetlands and include maintenance and monitoring. Wetland banking opportunities may be available which may slightly decrease costs.

Roundabout costs are based on the City Comprehensive Plan dated February 2012, Table 8, Transportation Element (Project ID I-13). The planned cost is \$2,240,000 in 2012 dollars and has been rounded to \$2,725,000 in 2016 dollars assuming 5% inflation per year.

The unit price and lump sum estimate reference sources used for this study include:

- City of Kent S 228th BNSF Overcrossing (2010)
- Anacortes / Guemes Dock Rehabilitation Project (2010)
- Sulphur Creek Bridge (2010)
- Conrad Road Bridge (2010)
- Skagit County Hwy. 99 BNSF Overcrossing (In Development)
- WSDOT Bid history
- WSDOT Bridge Design Manual

References

- Guidelines for Railroad Grade Separation Projects – BNSF Railway / Union Pacific Railroad, 2007
- WSDOT Bridge Design Manual, February 2014
- AASHTO LRFD Bridge Design Specifications, 6th Edition
- AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2nd Edition, 2011 with 2014 interim revisions

Appendix

Appendix A – Cost Estimates

- A1. Summary
- A2. – A5. Option 1
- A6. – A9. Option 2
- A10. – A13. Option 3A
- A14. – A17. Option 3B
- A18. – A21. Option 4A
- A22. – A25. Option 4B

Appendix B – Bridge Drawings

- B1. Option 1 Site Plan
- B2. Option 1 Plan and Elevation
- B3. Option 1 Typical Section
- B4. Option 2 Site Plan
- B5. Option 2 Typical Section
- B6. Option 3 Site Plan
- B7. Option 3 Typical Section
- B8. Option 4 Site Plan
- B9. Option 4 Typical Section

APPENDIX A
COST ESTIMATES

SHEARER DESIGN LLC

Bridge Design, Construction Engineering, Infrastructure Aesthetics

PROJECT City of Ferndale - Thornton Street Over BNSF

SUBJECT TS&L Cost Estimate - Summary

SHEET

JOB NO.

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RPD

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SUMMARY

	OPTION					
	1	2	3A (FEWER WALLS)	3B (MORE WALLS)	4A (FEWER WALLS)	4B (MORE WALLS)
STRUCTURES	\$ 3,847,460	\$ 4,647,065	\$ 3,847,460	\$ 4,980,910	\$ 5,307,130	\$ 6,276,730
ROADWAY	\$ 8,099,955	\$ 8,421,205	\$ 8,853,405	\$ 8,509,055	\$ 8,329,605	\$ 7,893,605
PROPERTY ACQUISITION	\$ 630,521	\$ 1,122,335	\$ 1,140,935	\$ 1,114,675	\$ 1,215,467	\$ 494,985
WETLAND MITIGATION	\$ 550,000	\$ 1,100,000	\$ 1,650,000	\$ 1,200,000	\$ 700,000	\$ 500,000
CONSTRUCTION COST (2014)	\$ 13,127,936	\$ 15,290,605	\$ 15,491,800	\$ 15,804,640	\$ 15,552,202	\$ 15,165,320
PRELIMINARY ENGINEERING	25% \$ 3,281,984	\$ 3,822,651	\$ 3,872,950	\$ 3,951,160	\$ 3,888,051	\$ 3,791,330
CONSTRUCTION ENGINEERING	18% \$ 2,363,028	\$ 2,752,309	\$ 2,788,524	\$ 2,844,835	\$ 2,799,396	\$ 2,729,758
CONTINGENCY	20% \$ 2,625,587	\$ 3,058,121	\$ 3,098,360	\$ 3,160,928	\$ 3,110,440	\$ 3,033,064
2014 TOTAL	\$ 21,398,536	\$ 24,923,686	\$ 25,251,634	\$ 25,761,563	\$ 25,350,089	\$ 24,719,472
ASSUMED INFLATION	5% \$ 2,193,350	\$ 2,554,678	\$ 2,588,292	\$ 2,640,560	\$ 2,598,384	\$ 2,533,746
2016 TOTAL	\$ 23,591,886	\$ 27,478,364	\$ 27,839,926	\$ 28,402,123	\$ 27,948,473	\$ 27,253,217
2016 TOTAL (ROUNDED)	\$ 23,600,000	\$ 27,480,000	\$ 27,840,000	\$ 28,410,000	\$ 27,950,000	\$ 27,260,000