

MnDOT District 1 Freight Plan

Task 5 Working Paper

August 22, 2019



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The purpose of this working paper is to present the results of the project feasibility assessment conducted for the highly ranked projects identified through the study efforts completed in Tasks 1 through 5. The focus of this task is to develop improvement concepts and the corresponding cost estimates to enable MnDOT to understand the relative benefits, impacts, and costs associated with options for addressing the identified project needs. Overall, the efforts focused on identifying relatively lower cost improvement options to enhance the potential for realizing implementation in the coming years.

This working paper describes the methodology for selecting the projects to develop concepts and presents each concept along with an accompanying planning level cost estimate. ***It is important to emphasize that the improvements and associated costs developed as part of this task are conceptual and are intended to provide enough information to facilitate future decision making regarding freight program funding and possible implementation priorities.*** All projects will require additional project development activities and public outreach to fully assess options, impacts, and costs.

Projects Carried Forward to the Project Feasibility Phase

As documented in the Task 5 Working Paper, more than 120 potential improvement projects were identified across the MnDOT District 1 region, using data analysis and stakeholder input. These projects were assessed against safety, performance, and condition considerations to assist in determining the priority ranking of each relative to each other. Applying these factors, a list of the top 30 ranked projects was developed. The top 30 list was reviewed by the technical team and a final sort was completed to further prioritize projects with the highest heavy commercial traffic volumes. This final list is presented in Table 1.

Given budget limitations, improvement concepts could not be prepared for all 30 projects included in Table 1. It was decided to begin at the top of the list and complete as many as the task budget would allow.

Project Feasibility Improvement Concepts

In the end, concepts and cost estimates were developed for 20 of the projects (some with multiple options) included in Table 1. In addition, concepts were not prepared for projects DCJ and DCH (segments of US 53) even though they were in the top 20 rankings because not enough data is available to understand the issues that need to be addressed. Improvement concepts were developed for the projects illustrated in Figure 1. The remainder of the report is structured to present the following information for each of the projects included in Figure 1:

- Project Overview
- Conceptual Layouts
- Planning Level Cost Estimate

TABLE 1

**Investment Priorities - Projects Recommended for Feasibility Assessment
Final Priority Sorting by HCAADT**

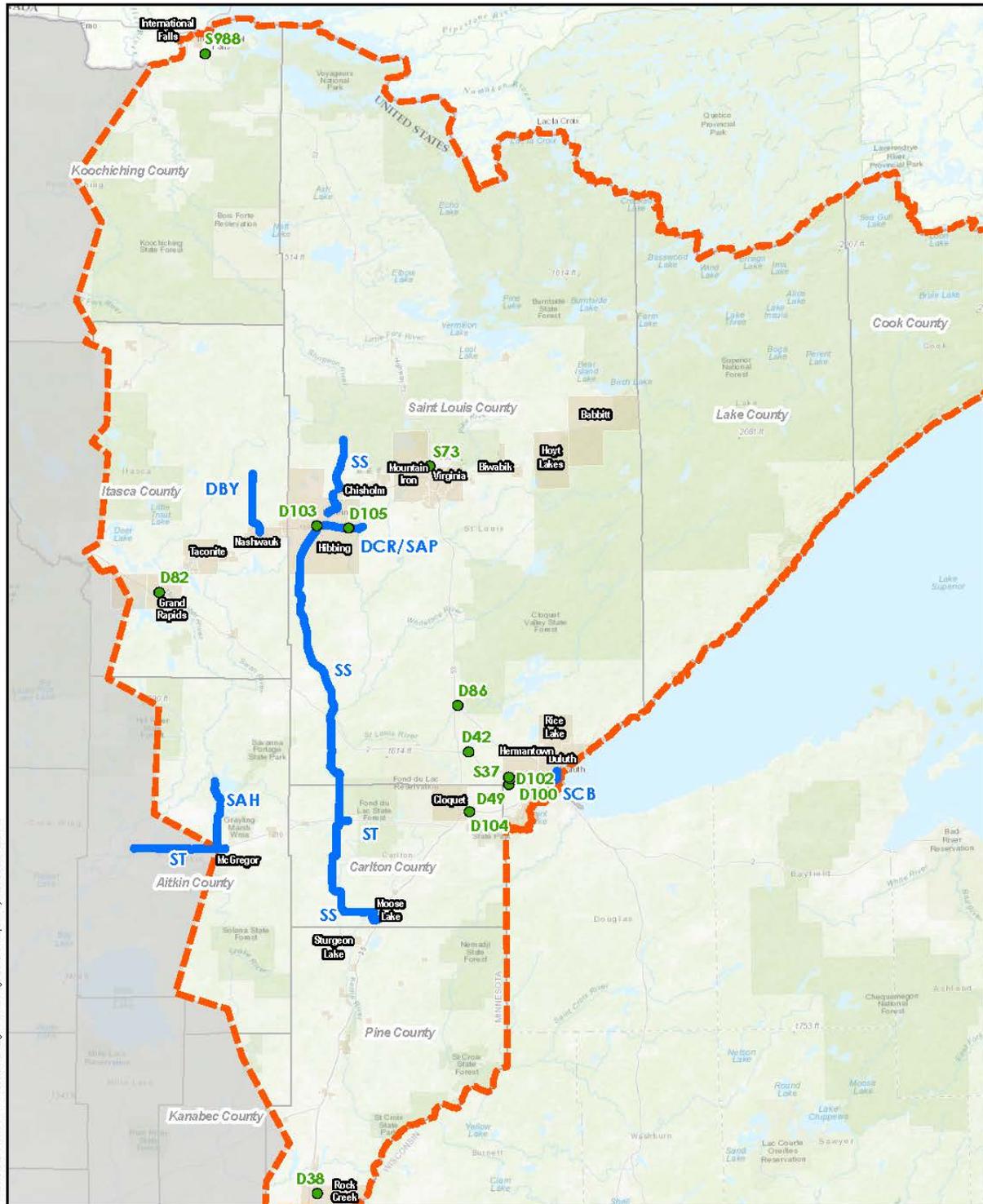
PROJECT ID	Type	Hwy	Location	State/County/Local	Needs/Issue Type	AAADT	HCAADT	TrkPct	Complexity/Scope	Rationale
D104	Inter section	USTH 35	Carlton County	state/county	Safety	28500	1450	5.1%	High	high ADT, outdated interchange design, short accel lane
D102	Inter section	US 2	Saint Louis County	state/county	Safety	5500	1200	21.8%	Medium	higher ADT, skewed intersection
S37	Inter section	Highway 2	Adolph	state/county	Safety	5500	1200	21.8%	Low	higher ADT, skewed intersection
D86	Inter section	USTH 53	Saint Louis County	state	Safety	11000	1000	9.1%	High	high ADT, system interchange
D82	Inter section	4TH ST NW	Grand Rapids	state	Safety	18900	960	5.1%	High	high ADT, downtown Grand Rapids corridor
DCJ	Segment	Miller Trunk Hwy	Eveleth (Heading South)	state	Safety	9400	860	9.1%	High	high ADT expressway, combine with DCR
D100	Inter section	USTH 53	Saint Louis County	state	Safety	22900	850	3.7%	Medium	high ADT, major intersection
S73	Inter section	US 53/P&H Road	Virginia	state	Safety	12200	590	4.8%	Medium	manufacturer expansion
DCH	Segment	Miller Trunk Hwy	Eveleth (Heading South)	state	Safety	9600	495	5.2%	High	high ADT expressway, combine with DCJ
D38	Inter section	MIN 70	Rock Creek	state	Performance	4250	495	11.6%	Medium	higher ADT, TH/RR underpass
DCR/SAP/D105	Segment	MINTH 37	Hibbing (Heading East)	state	Safety	7700	455	5.9%	Medium	higher ADT, corridor connects to Hibbing airport
D103	Inter section	USTH 169	Saint Louis County	state/county	Safety	10400	450	4.3%	Medium	high ADT, retail land use intersection
D42	Inter section	US 2	Duluth	state	Performance	5000	430	8.6%	Medium	high ADT RR underpass and close proximity to Hwy 2/194 intersection
SAH	Segment	State Highway 65	Calumet to McGregor	state	Safety	3867	417	10.8%	Medium	higher ADT
ST	Segment	State Highway 210	Aitkin to Cloquet	state	Safety	3250	327	10.1%	Medium	higher ADT
SS	Segment	State Highway 73	Entire Highway	state	Safety	3106	211	6.8%	Medium	higher ADT
SCB	Segment	Mesaba Avenue		state	Performance	17300	185	1.1%	Low	high ADT
DBY	Segment	Central Ave	Maishvaak	state	Safety	1660	61	3.7%	Medium	high ranking
D49	Inter section	MIDWAY RD	Saint Louis County	county	Safety	7200			Medium	higher ADT, at-grade RR crossing
S988	Inter section	US 53/Highway 332	International Falls	state/county	Safety	2500			High	Large number of logging trucks crossing US 53
D14	Inter section	UTWN 446	Trout Lake Township	county	Condition	25			Medium	very poor condition bridge
D45	Inter section	OLD CARLTON RD	Cloquet	county	Safety	3000			Medium	higher ADT, at-grade RR crossing
D46	Inter section	N CLOQUET RD E	Carlton County	county	Safety	2350			Medium	higher ADT, at-grade RR crossing
D48	Inter section	CSAH 7	Mountain Iron	county	Safety	2000			Medium	higher ADT, at-grade RR crossing
D52	Inter section	MINERAL AVE	Mountain Iron	county	Safety	2900			Medium	higher ADT, at-grade RR crossing
D23	Inter section	MUN 10	Cook	local	Condition				Medium	in downtown Cook
S989	Inter section	Need low clearance warning systems		local	Performance	1250			Low	local street, low truck volumes
S990	Inter section	Need low clearance warning systems		local	Performance				Low	local street, low truck volumes
D37	Inter section	CSAH 89	Duluth	county	Performance	5200			Medium	higher ADT, low clearance RR underpass
D1	Inter section	CSAH 1	Cloquet	county	Condition	2600			Medium	higher ADT creek bridge

Multiple concepts developed

Single concept developed

No identifiable concepts available for this segment of US 53

Concepts not developed due to budget limitations



Path: S:\AEC\CPCST147403\Final-Map-Drawings\900-01\SMaps\Projects\Assess\42.mxd

		Project: CPCST 147403 Print Date: 7/31/2019 Map by: msteuernagel Projection: Source:	<h3>Projects Included in the Feasibility Assessment</h3> <p>District 1 - MnDOT</p>	<h2>Figure 1</h2>
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This map is neither a legally recorded map nor a survey map and is not intended to be used as one. The map is a compilation of records, information, and data gathered from various sources. It is not to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) data used to prepare this map are accurate, and SEH does not represent that the GIS data can be used for navigational, banking, or any other purpose requiring exacting measurements or distances or projections. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

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Project D104 – I-35/CSAH 45 Interchange near Cloquet

This project focuses on issues associated with the I-35/CSAH 45 interchange near Cloquet. The key issues at this substandard folded-diamond interchange including tight radius loops and S-curves on the east ramp legs. These issues result in:

- Traffic (particularly trucks) entering the freeway well below posted speeds (70 mph)
- Exiting traffic to decelerate in the freeway through lanes
- Freight load shifts due to tight curvature

Two alternatives were developed to address the identified operational issues for Project D104:

- Alternate 1 (Figure 2) - includes restriping the mainline of I-35 to provide extended acceleration and deceleration lanes for all four ramp legs. The acceleration and deceleration lanes can be accommodated without widening the in-place roadway and bridges by assuming 11' travel lanes and reducing shoulder widths in select locations. The result is the modifications can be achieved for approximately \$30,000.
- Alternate 2 (Figure 3) – this option includes all of the lane restriping included with Alternate 1 as well as reconstructing the eastbound on-ramp to eliminate the sharp S-curves. The reconfigured ramp could result in some wetland impacts and might require some minor right-of-way acquisition. The estimated cost for Alternate 2 is \$1.5 million.

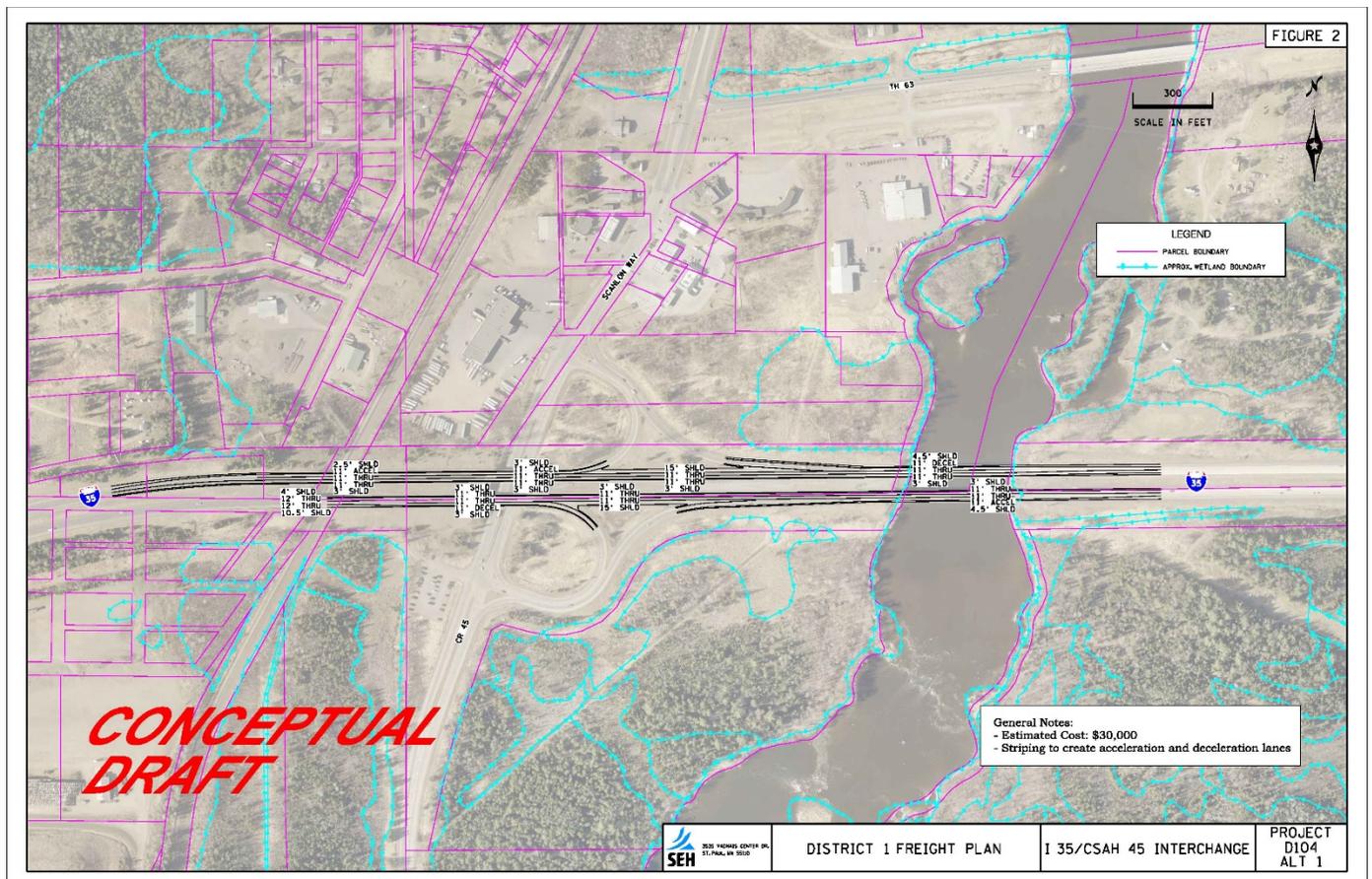
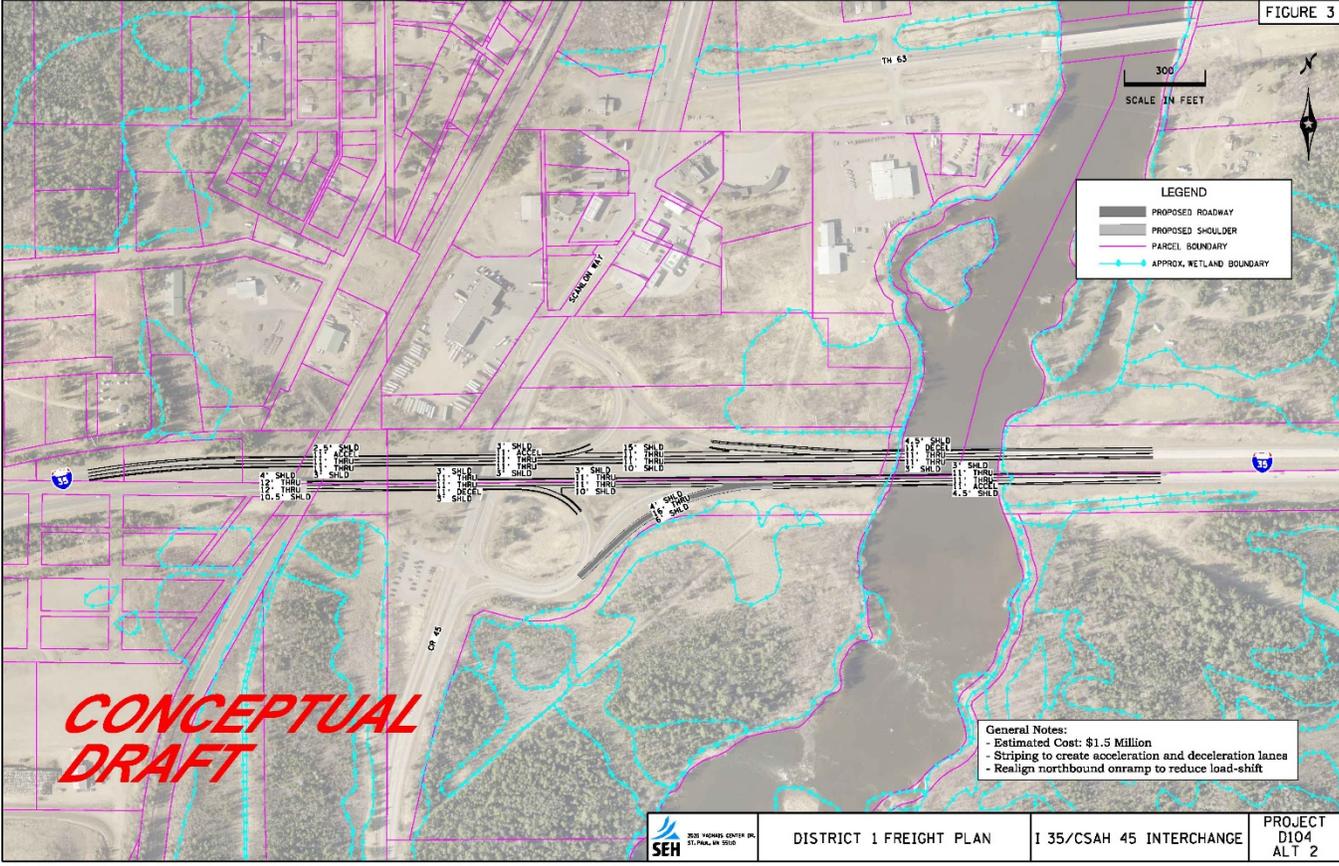


FIGURE 3



**CONCEPTUAL
DRAFT**

LEGEND

- PROPOSED ROADWAY
- PROPOSED SHOULDER
- PARCEL BOUNDARY
- APPROX. WETLAND BOUNDARY

General Notes:

- Estimated Cost: \$1.5 Million
- Striping to create acceleration and deceleration lanes
- Realign northbound onramp to reduce load-shift



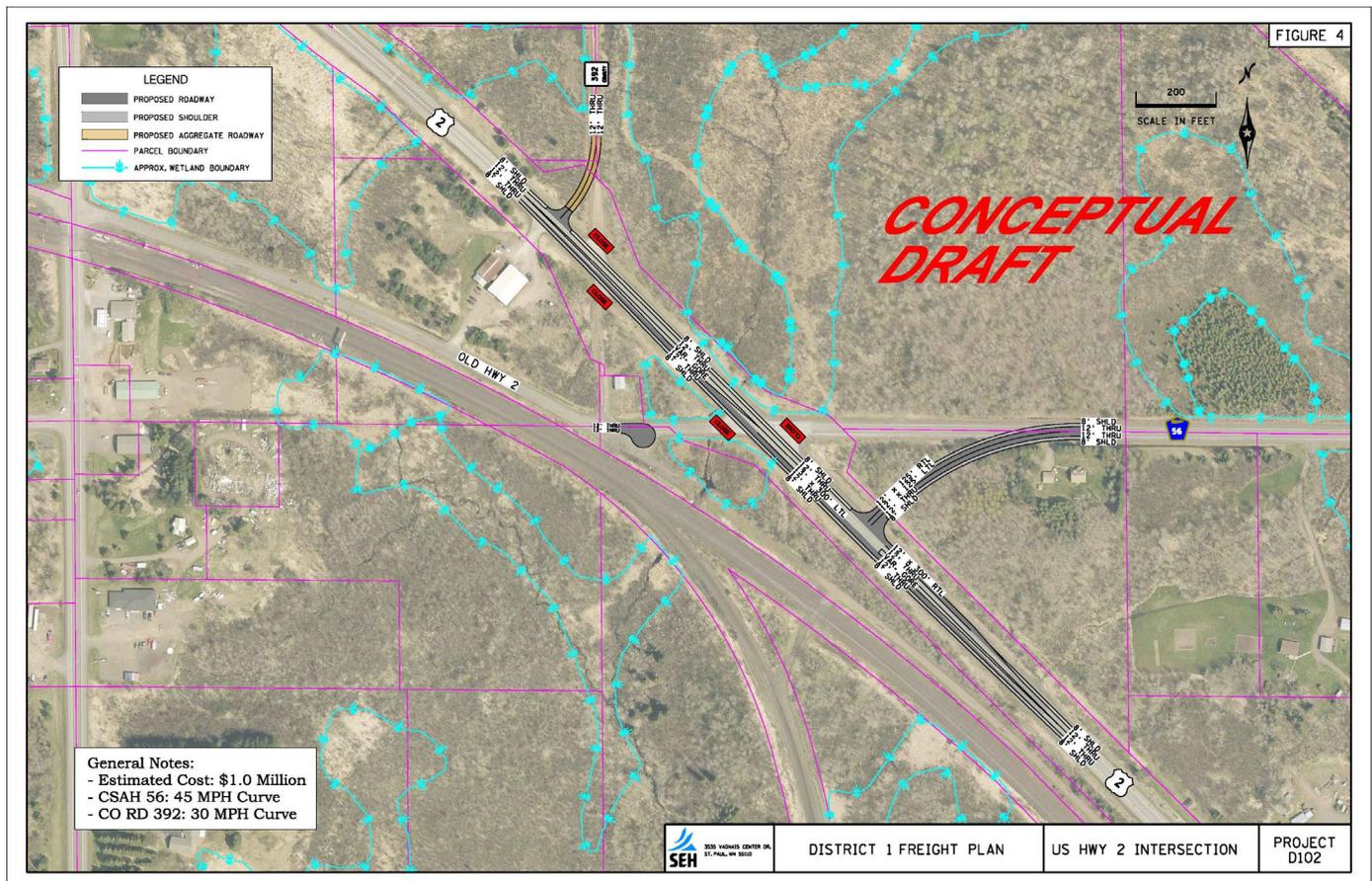
DISTRICT 1 FREIGHT PLAN

I 35/CSAH 45 INTERCHANGE

PROJECT
D104
ALT 2

Project D102 – US Highway 2/CSAH 56 Intersection Area

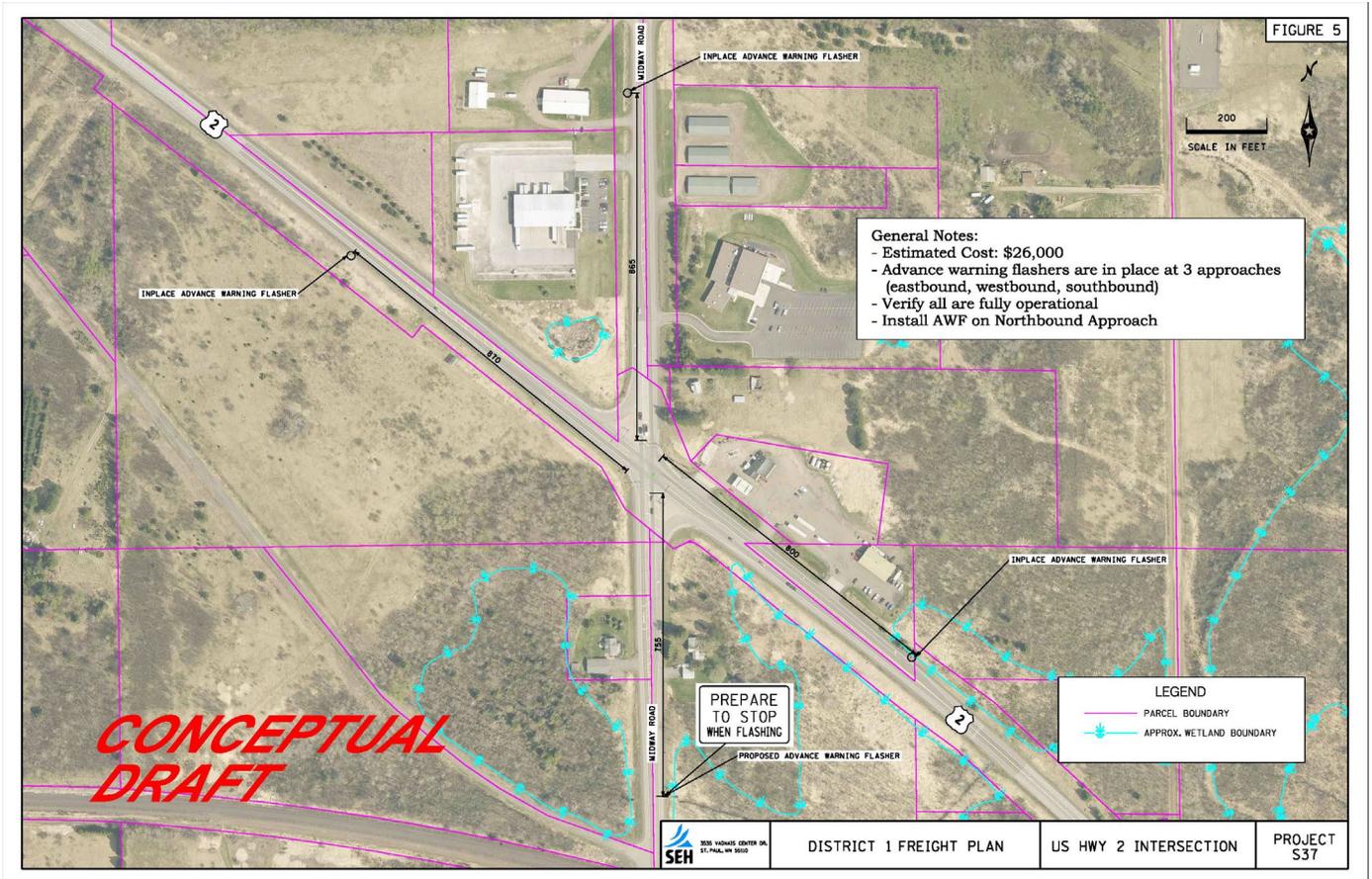
This project includes addressing two skewed county road intersections (CSAH 56 and CR 392) along US Highway 2 northwest of Proctor. The two intersections are only 550 feet apart and their skewed orientation presents safety and operational challenges. Figure 4 illustrates the proposed improvements which include realigning both county roads to create perpendicular T-intersections as well as creating a cul-de-sac on Old Highway 2 to further reduce direct access to US Highway 2. The realigned intersections avoid impacting wetlands, however, the CSAH 56 realignment does require some additional right-of-way. With the access changes, the proposed improvements also provide a potential opportunity to remove Old Hwy 2 between Midway Road and CSAH 56. The estimated cost for Project D102 is \$1 million.



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Project S37 – US Highway 2/Midway Road Intersection

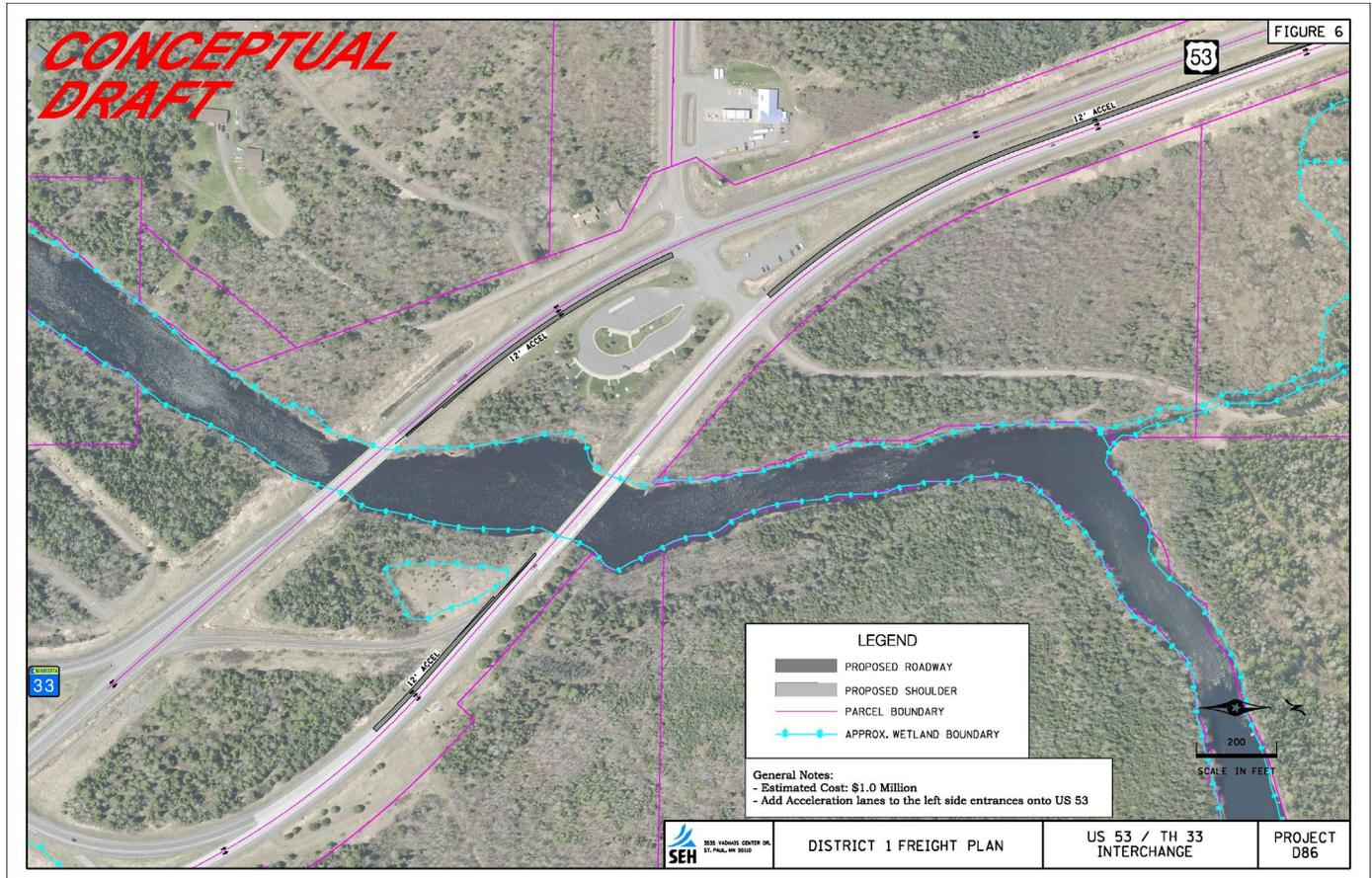
Project S37 is immediately west of Project D102 on US Highway 2 at Midway Road (CSAH 13). The intersection is on a skew but is signalized and includes advanced warning flashers at three of the four approaches. Concern was expressed at a project open house about intersection visibility, especially for the Midway Road approaches. After review by MnDOT and St. Louis County staff it was determined that the intersection is not a significant safety issue and therefore does not warrant a significant investment. As a result, the proposed improvement is limited to adding an advanced warning flasher at the fourth (south approach) intersection leg (see Figure 5). The estimated cost is \$26,000.



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Project D86 – US Highway 53/Trunk Highway 33 Interchange

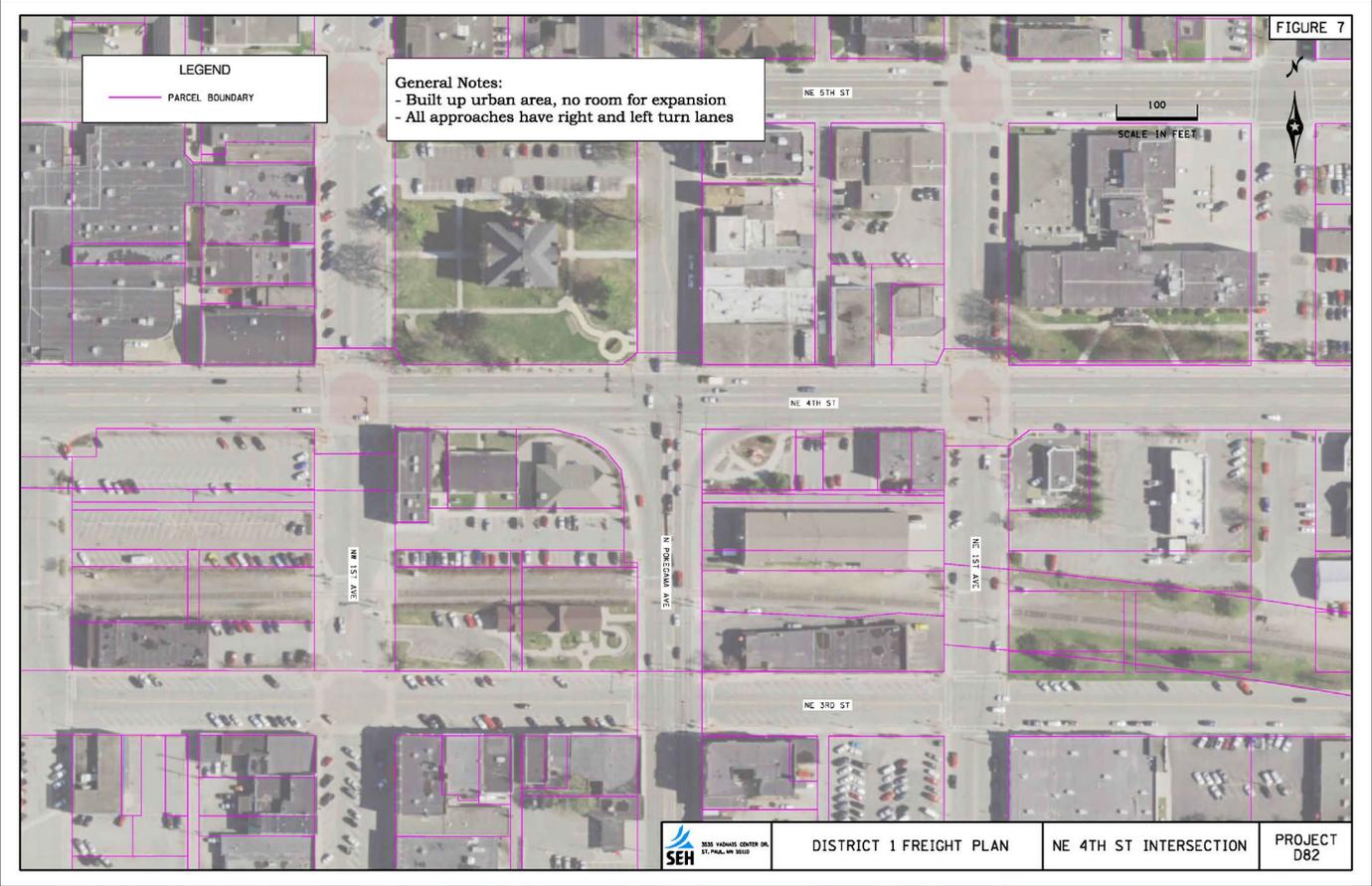
This project focuses on operational issues at the US 53/TH 33 interchange (Figure 6). Substandard curves, minimal acceleration lanes, and the close proximity of the Swan Lake Road (CSAH 47) intersection are the primary challenges. Given the focus of this process is to identify relatively low-cost solutions, major interchange modifications were not considered. Rather, the proposed improvements focus on adding acceleration lanes to improve merging conditions for the four left side entrances within the interchange area. The northbound TH 33 acceleration lane may introduce some wetland impacts. The estimated cost is approximately \$1 million.



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Project D82 – US Highway 2/US Highway 169 Intersection in Downtown Grand Rapids

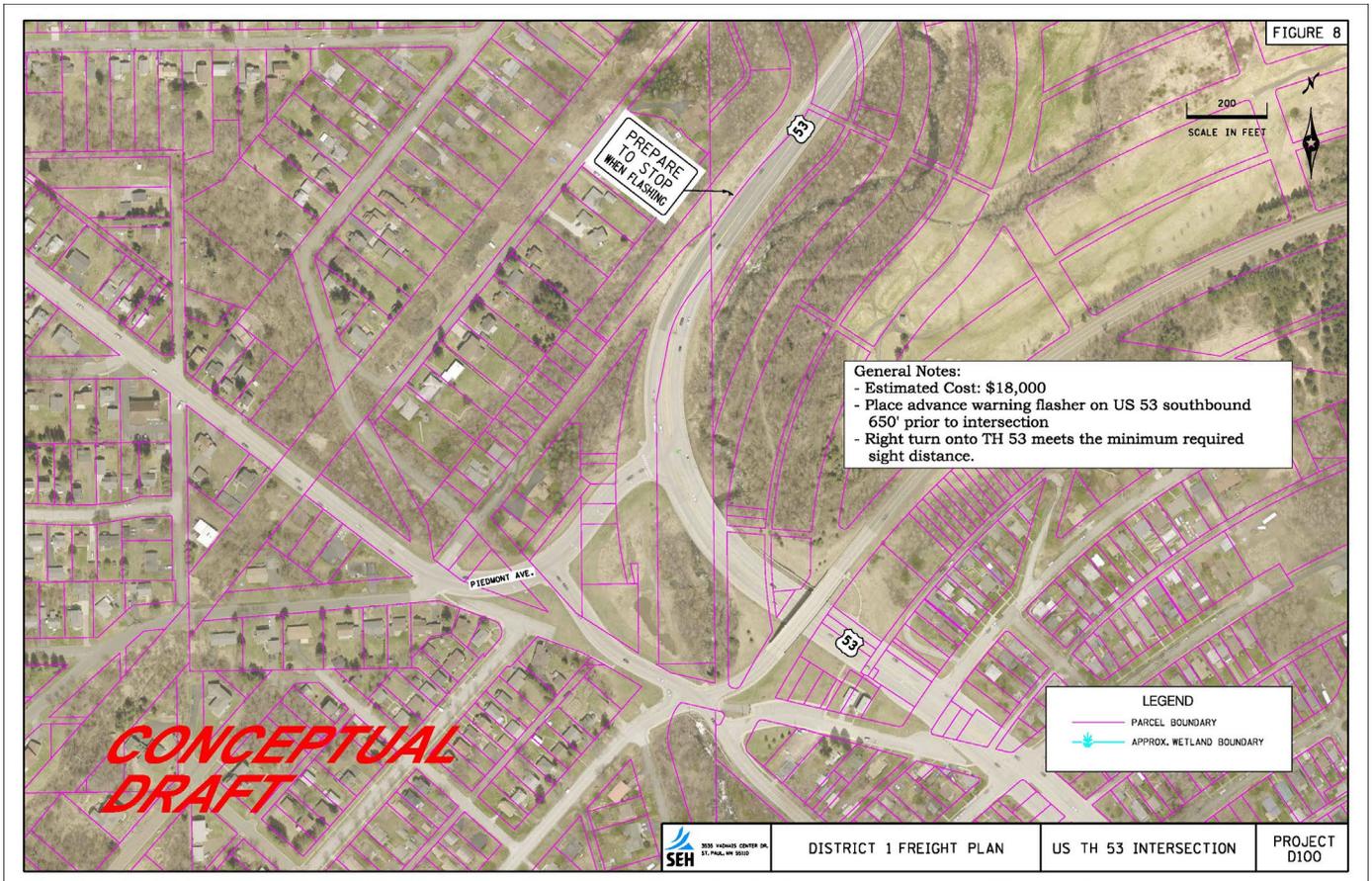
Project D82 involves the signalized intersection of US 2 and US 169 in downtown Grand Rapids (Figure 7). The intersection has high daily traffic volumes including 18,900 for the east approach, 16,400 for the south approach and 14,200 for the west approach. To address the increasing traffic volumes over time, the intersection geometry has already been maximized within the constrained urban environment and limited right-of-way. The intersection currently has left and right turn lanes including free-right turn lanes for the eastbound US 2 and northbound US 169 movements. A multi-lane roundabout was initially considered as an improvement option but was removed from further consideration given the constrained right-of-way and adjacent signalized intersections on US 2 and US 169. MnDOT staff have concurred that a roundabout is not viable. No other viable options were identified for this location.



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Project D100 – US Highway 53/Piedmont Avenue Intersection in Duluth

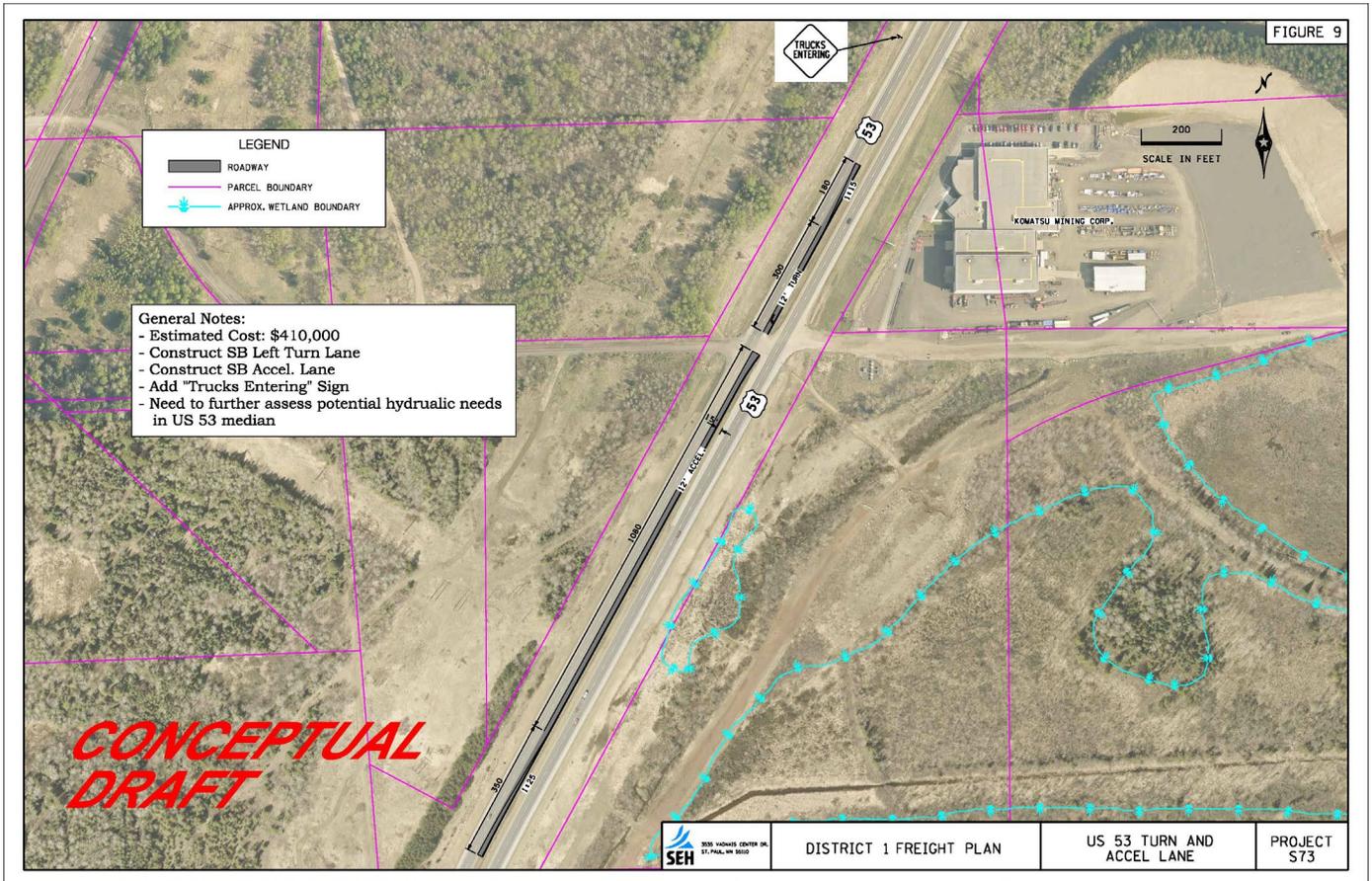
Project D100 is located at the signalized intersection of US 53 and Piedmont Avenue in Duluth. The intersection is located on a fairly significant curve and US 53 extends along a steady grade as it transitions from the Duluth harbor area to the top of the bluff line. After reviewing the conditions in the intersection area it was determined there are adequate sight lines and that further capacity modifications are not needed. As a result, the proposed improvements are limited to adding a “Prepare to Stop” warning sign on US 53 southbound approaching the intersection area (Figure 8). The estimated cost for this improvement is \$18,000.



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Project S73 – US Highway 53/P&H Road Intersection near Virginia

This project is located at the US 53/P&H Road intersection north of Virginia. The primary issue at this intersection is large trucks exiting and entering US 53. To address this operational and safety issue the proposed improvements include adding a southbound left turn lane and southbound inside acceleration lane to accommodate the truck turning movements. In addition, a “Trucks Entering” warning sign is proposed for southbound US 53 through traffic to enhance awareness for highway travelers that trucks are entering the highway ahead (Figure 9). Given the identified improvements extend into the existing highway grass median, additional design details are needed to determine whether the modifications would adversely impact drainage in the US 53 median. The estimated cost of the improvements, assuming no additional drainage features, is \$410,000.



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Project D38 – Trunk Highway 70 east of I-35 south of Pine City

Project D38 is located on TH 70 just east of I-35 between Rush City and Pine City. The specific segment of TH 70 extends east from the CSAH 33 intersection, crosses under a low clearance railroad bridge and through two low speed curves. The initial improvement considerations focused on addressing the substandard vertical and horizontal clearance issues associated with the railroad overpass east of the CSAH 33 intersection. However, after receiving and assessing the existing bridge plans and getting further input regarding concerns associated with the referenced S-curves, the assessment was expanded. The result was the development of two primary alternates:

- Alternate 1 (Figure 10) – this alternate retains the existing railroad bridge and reconstructs the low speed S-curves to attain a minimum 45mph design. These improvements require additional right-of-way including the acquisition of one residence. The estimated construction cost, not including right-of-way is \$3.2 million.
- Alternate 2 (Figure 11) – this alternate assumes the same roadway improvements as alternate 1 and also includes replacing the railroad bridge. It is assumed that a shoofly would be required. Construction of the new bridge and shoulder widening on TH 70 may impact adjacent wetlands. The total estimated construction cost, not including right-of-way is \$7.5 million.

An additional option that could be considered for this segment of TH 70, but will require further study, is redirecting TH 70 to follow CSAH 33 and County Road 110 to avoid the railroad bridge and sharp S-curves. County Road 110 crosses the same railroad line at-grade (a signalized and gated crossing). This change would require coordinating with Pine County to arrange shifting roadway jurisdictions. It may also require further improvements at the TH 70/CSAH 33 and CSAH 33/County Road 110 intersections.

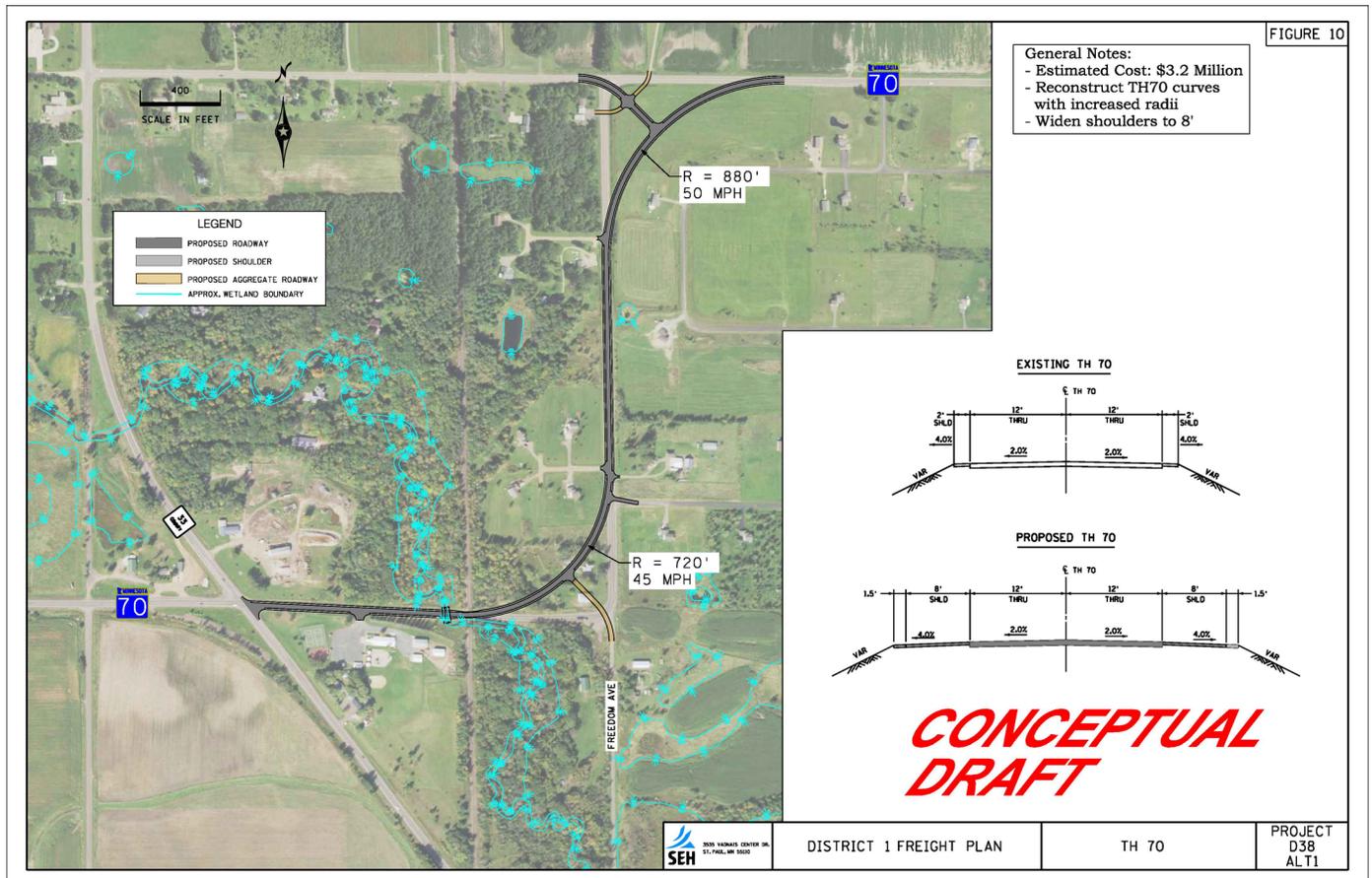
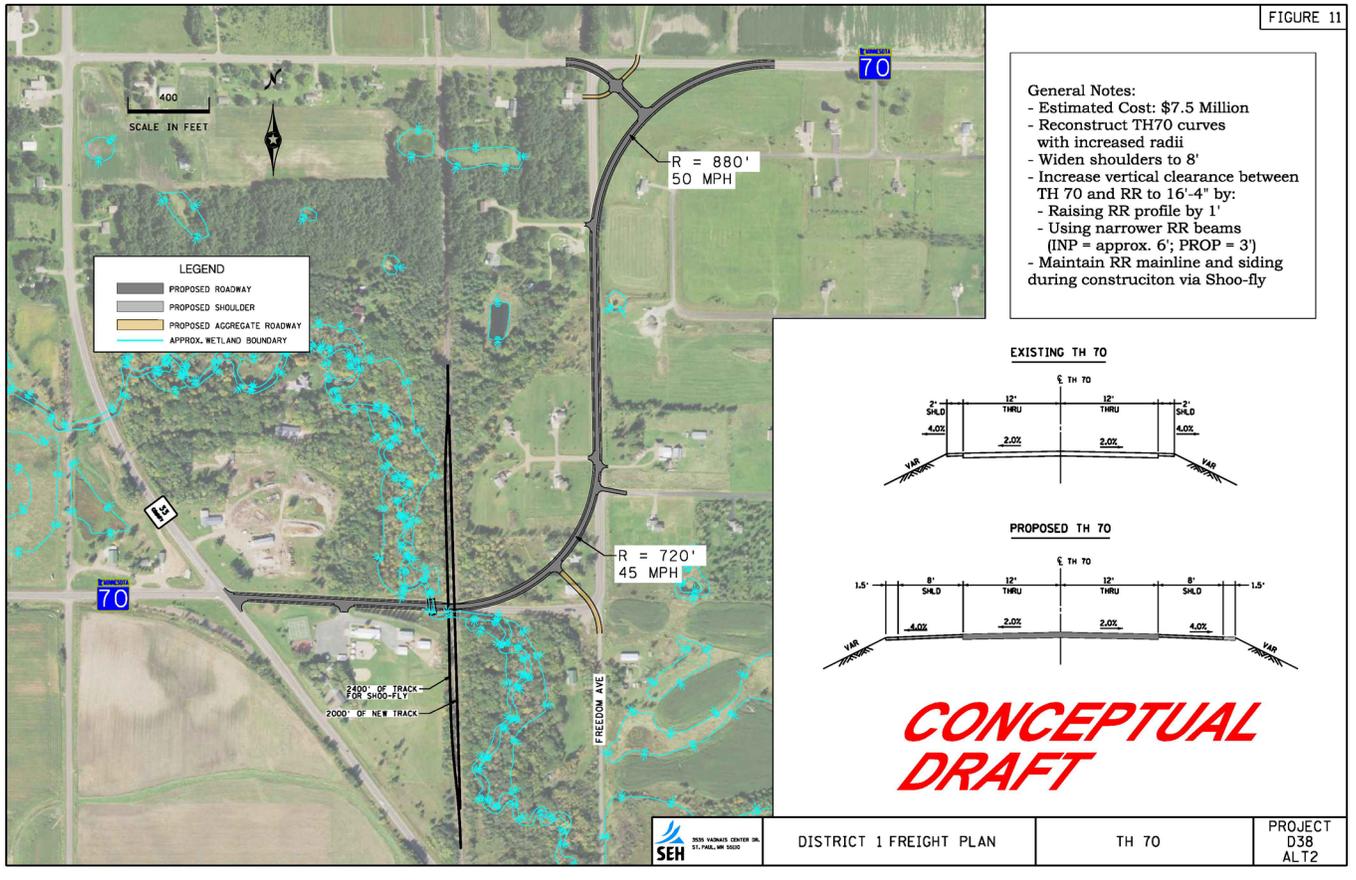
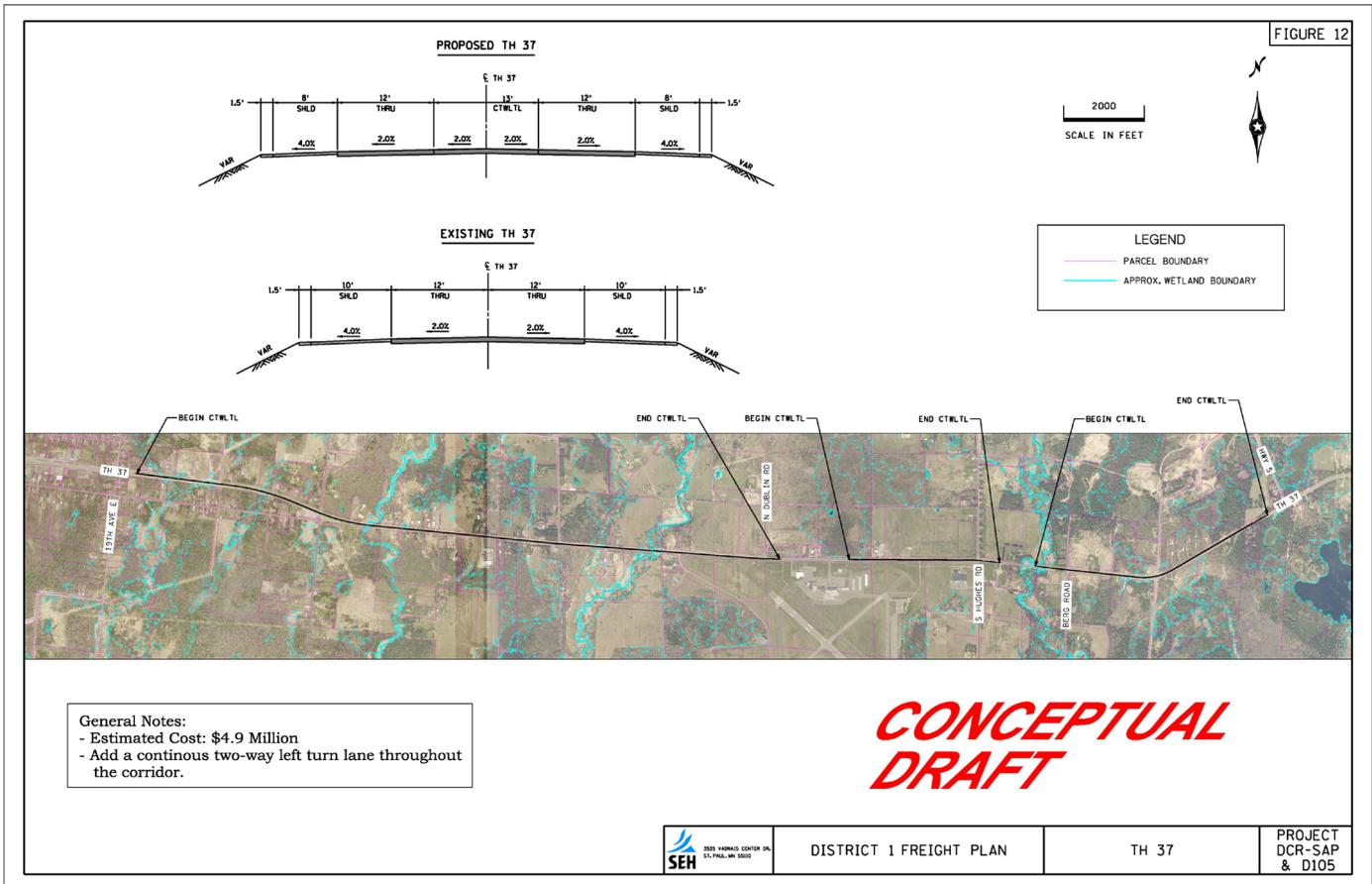


FIGURE 11



Project DCR/SAP/D105 – Trunk Highway 37 east of Hibbing

This grouping of three separate projects extends along TH 37 from Hibbing, approximately five miles, to the CSAH 5 intersection. Project DCR and SAP are two segments of TH 37 and Project D105 includes the TH 37/North Dublin Road intersection near the Hibbing Airport. The primary issues along this stretch of TH 37 include frequent driveways and fairly high average daily traffic volumes (6,500 ADT). To address these issues, the proposed improvement includes converting the entire corridor to a three-lane cross-section with a continuous center left turn lane (Figure 12). Approximately one mile of the three-lane section is already in place. It is anticipated that the improvements can be implemented within the existing right-of-way, however scattered wetland impacts are likely at various locations along the corridor. The estimated cost is \$4.9 million.

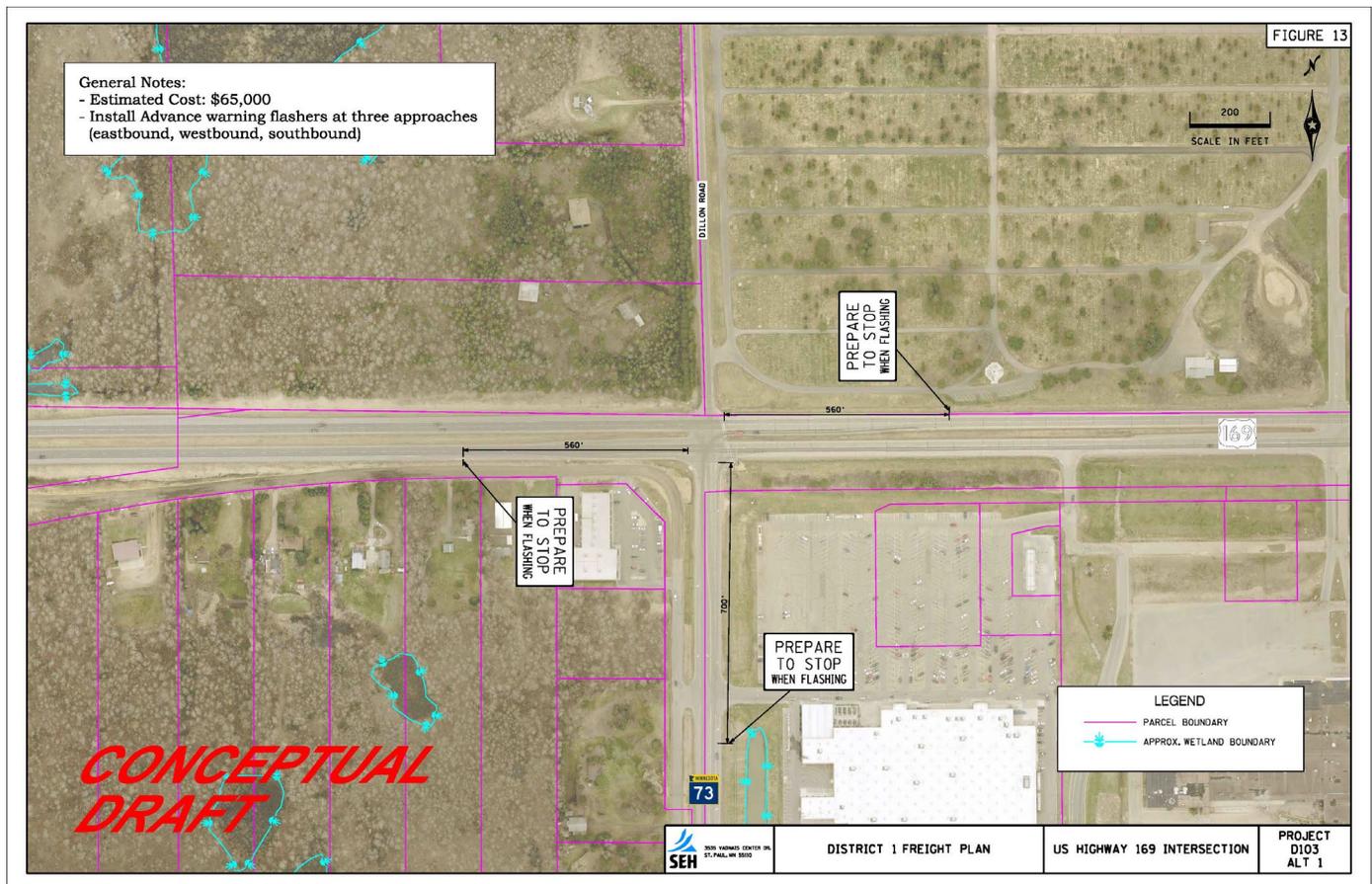


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Project D103 – US Highway 169/Trunk Highway 73 Intersection in Hibbing

Project D103 encompasses the signalized intersection of US 169 and TH 73 in Hibbing. US 169 is a four lane divided facility with turn lanes and TH 73 (south intersection leg) is two lanes with left and right turn lanes at the intersection. The north intersection leg is a low volume local road (Dillon Road). The intersection has relatively high daily traffic volumes and a large/high traffic generating retail facility in the southeast quadrant. Two improvement options have been developed.

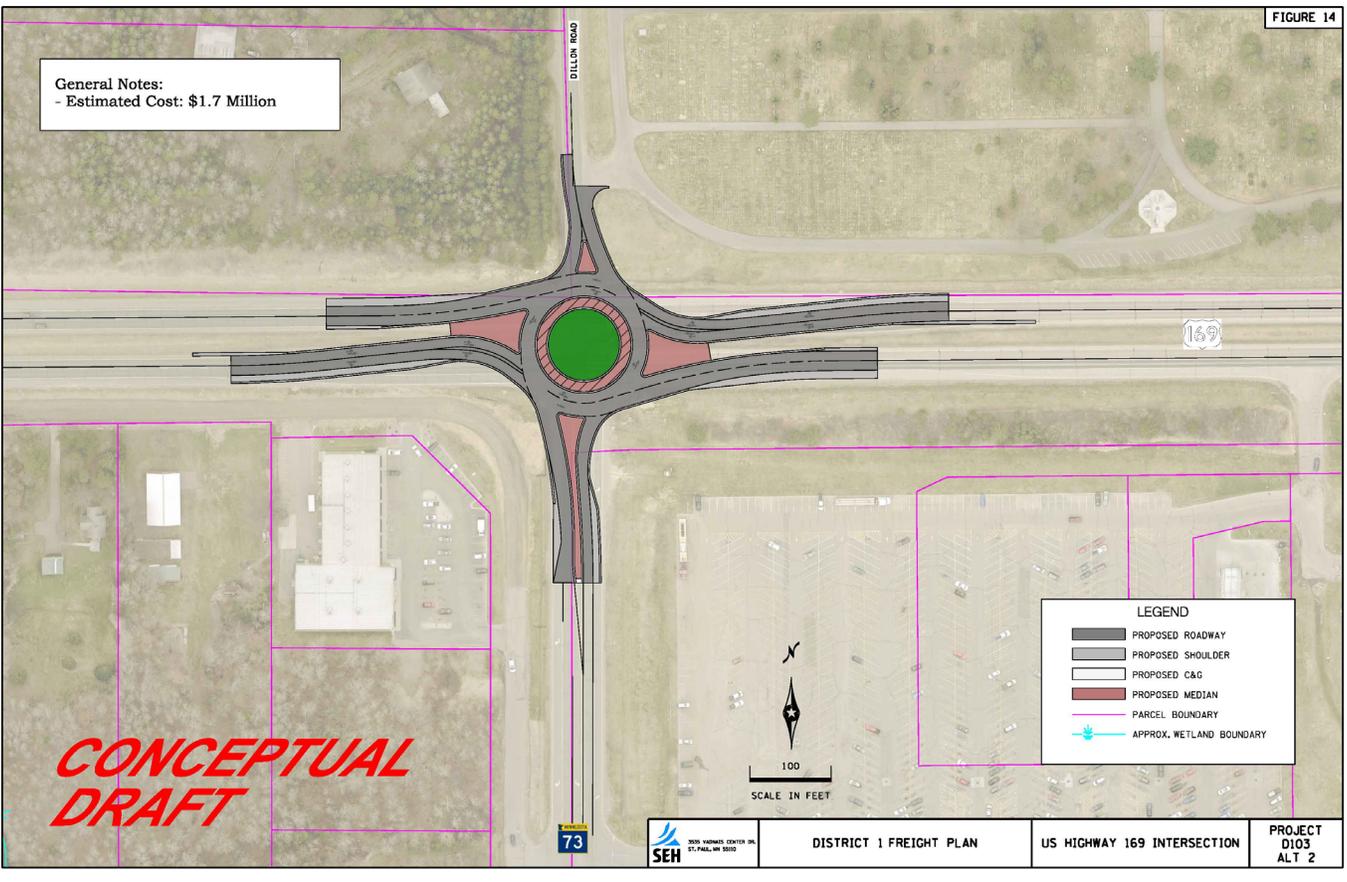
- Alternate 1 (Figure 13) – includes installing signal warning flashers at the west, south, and east approaches. The total estimated cost is \$65,000.
- Alternate 2 (Figure 14) – assumes constructing a roundabout. The roundabout is consistent with other recent changes to the US 169 corridor including a new roundabout approximately 1.6 miles to the east at the US 169/TH 37 intersection. The roundabout design would likely require some right-of-way along the northern side of US 169. The estimated construction cost is \$1.7 million.



***insert Figure(s)

FIGURE 14

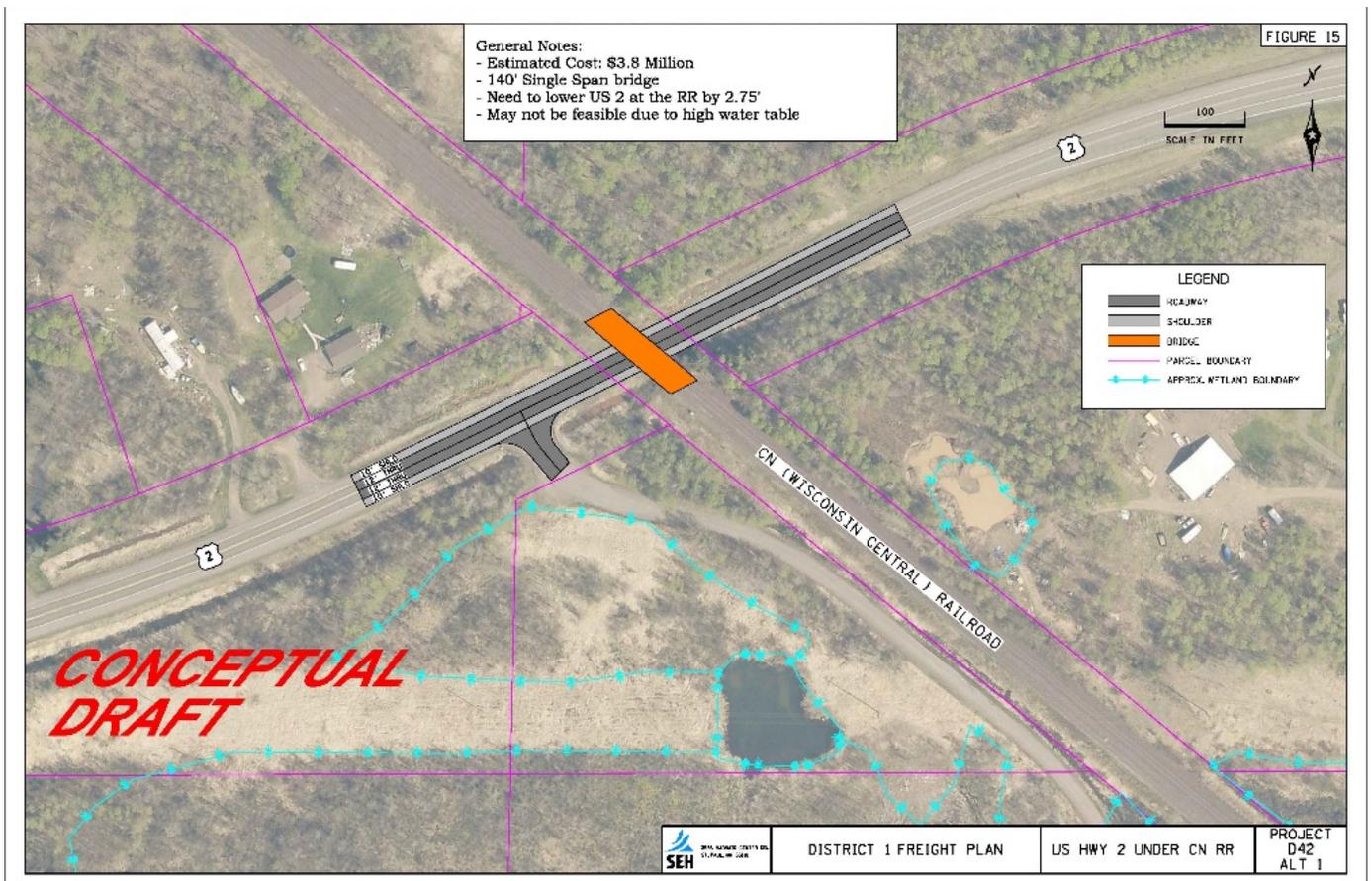
General Notes:
- Estimated Cost: \$1.7 Million



Project D42 – US Highway 2/CN Railroad Bridge

This project involves the CN railroad bridge over US 2 just west of the US 2/TH 194 intersection. The railroad bridge has both substandard vertical and horizontal clearance. Four improvement concepts have been developed and they include:

- Alternate 1 (Figure 15) – This assumes constructing a new bridge to achieve horizontal clearance standards and lowering US 2 approximately 3 feet to achieve vertical clearance standards. This approach avoids the need to construct a shoo-fly for temporary railroad use. After an initial review by MnDOT staff, this option was deemed likely not feasible because of hydraulics issues associated with the proposed lowering of US 2. The estimated cost is \$3.8 million.
- Alternate 2 (Figure 16) – This alternate is similar to Alternate 1 however it includes constructing a shoo-fly to facilitate the railroad bridge replacement and raising the profile of the railroad tracks. The shoo-fly tracks might result in some wetland impacts and require at least some temporary construction easements. US 2 does not need to be lowered with this option. The estimated cost is \$12.5 million.
- Alternate 3 (Figure 17) – Alternate 3 includes realigning US 2 south of the existing corridor and constructing a new railroad overpass and a new intersection with TH 194. The realignment introduces fairly significant wetland and right-of-way impacts. The estimated cost is \$11.7 million. Costs associated with potential intersection design options at US 2 and TH 194 are not included in this estimate.
- Alternate 4 (Figure 18) – Alternate 4 also involves realigning US 2 south of the existing corridor on a more straight east-west alignment that avoids impacts to a campground area but requires a longer railroad overpass. The realignment introduces fairly significant wetland and right-of-way impacts. The estimated cost is \$14.2 million. Costs associated with potential intersection design options at US 2 and TH 194 are not included in this estimate.



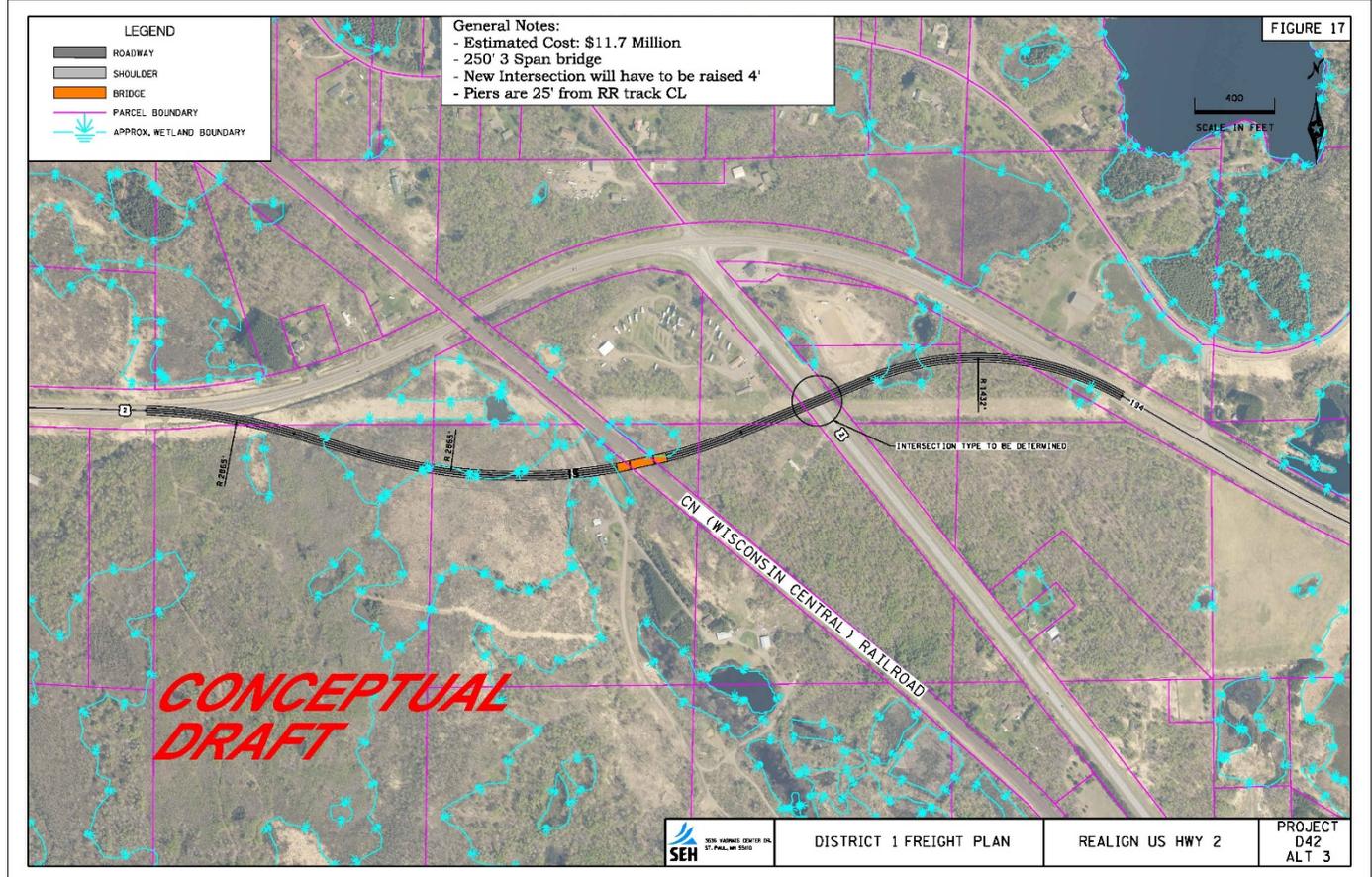
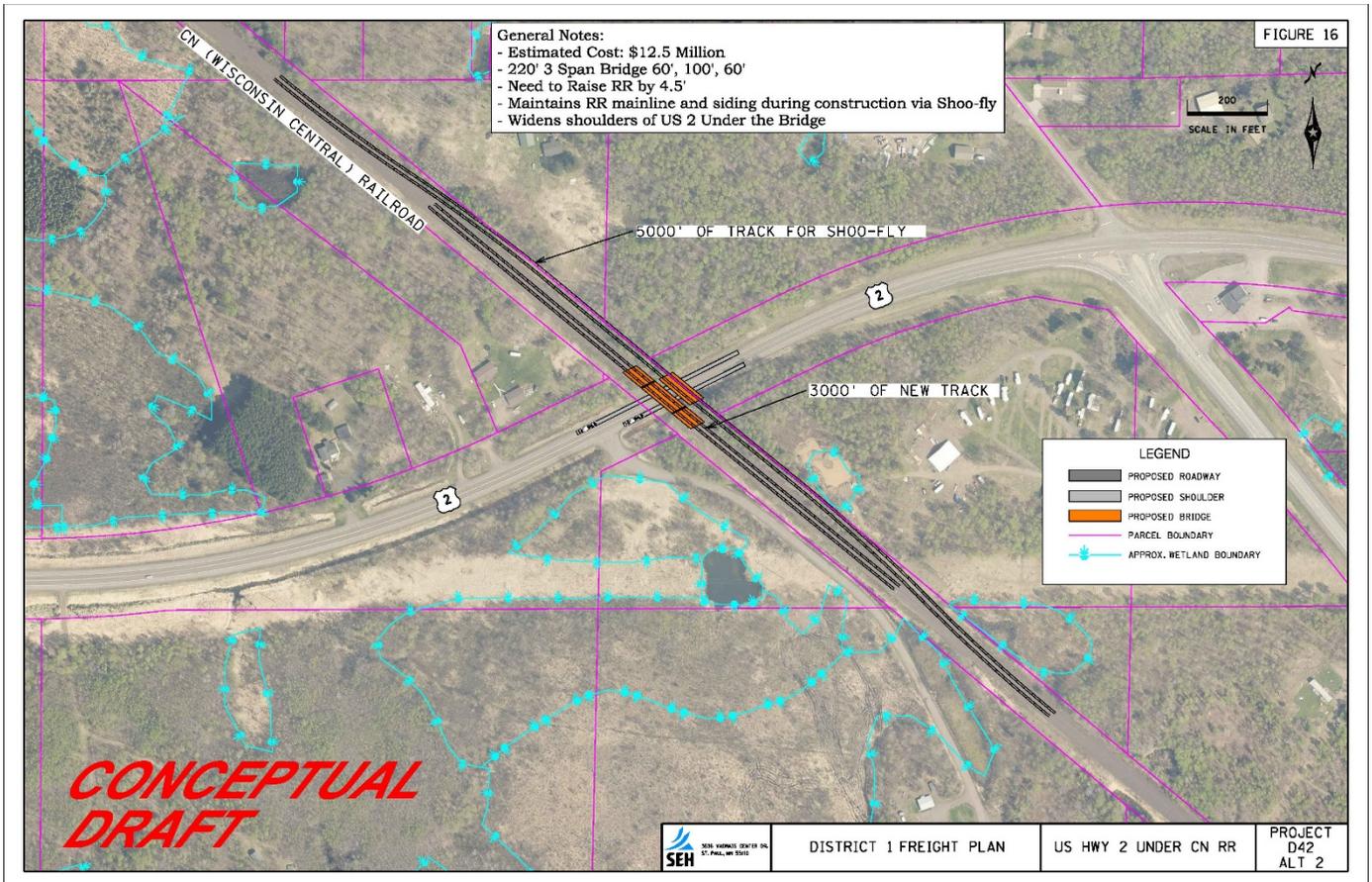
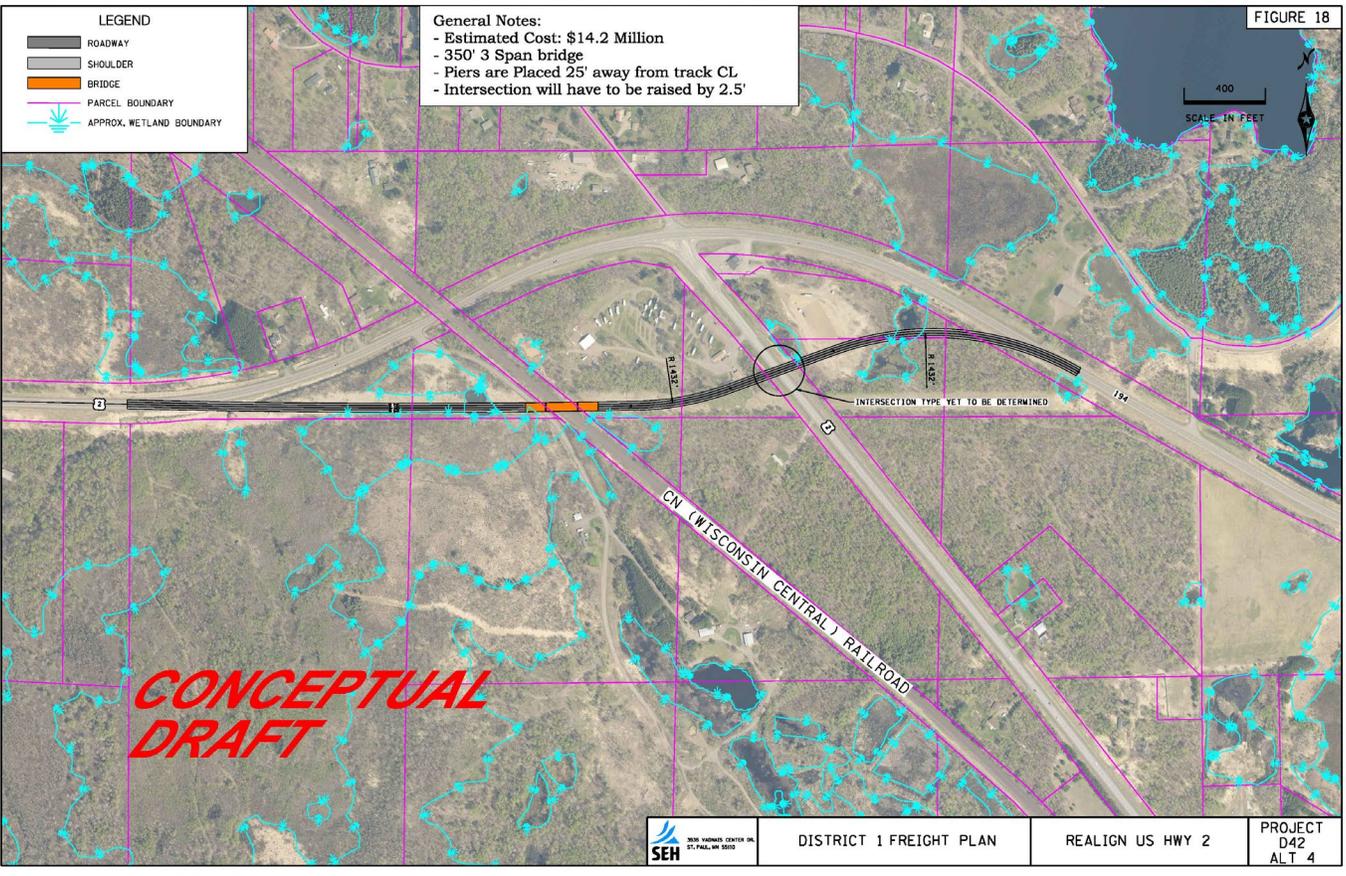


FIGURE 18



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Project SAH – TH 65 between McGregor and Big Sandy Lake

Project SAH extends approximately 12 miles along TH 65 between McGregor and Big Sandy Lake. Daily traffic volumes range from approximately 1,500 at the north end to 5,300 near McGregor. The primary issue along this corridor is narrow shoulders. To address this issue, the proposed improvements include widening the existing 2-foot shoulders to 8-feet (Figure 19). As part of future project development efforts, bypass lanes should also be considered at appropriate locations to improve travel safety. The proposed widening will result in spot right-of-way and wetland impacts along the corridor. The estimated cost is \$6.9 million.

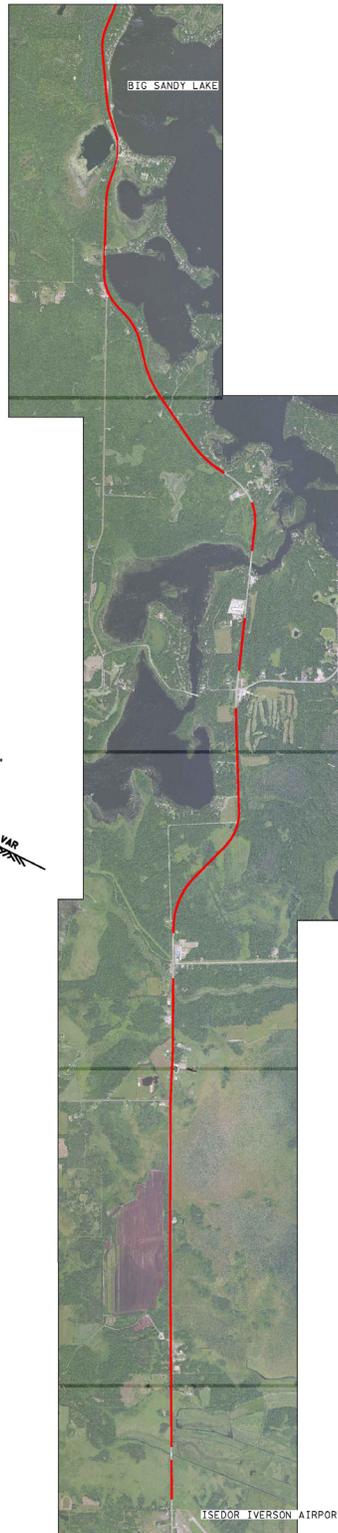
FIGURE 19

LEGEND

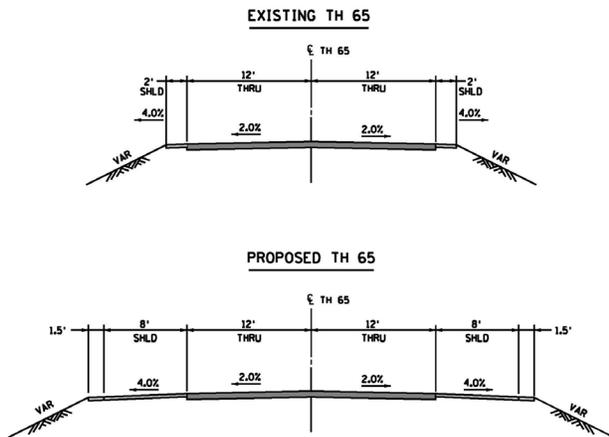
 SHOULDER WIDENING

General Notes:

- Estimated Cost: \$6.9 Million
- Widen shoulders to 8'



4000
SCALE IN FEET



**CONCEPTUAL
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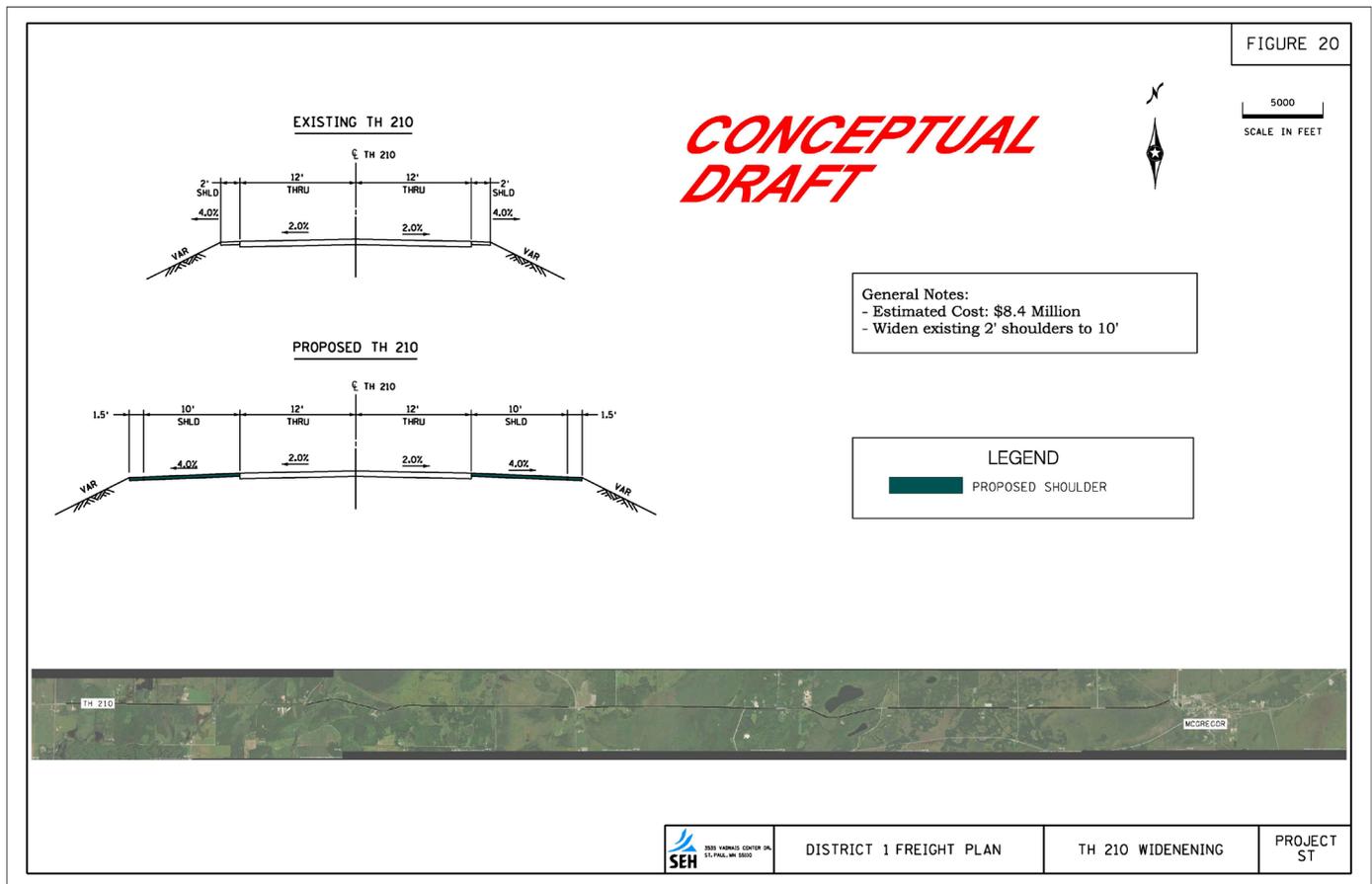
DISTRICT 1 FREIGHT PLAN

TH 65 CORRIDOR WIDENING

PROJECT SAH

Project ST – TH 210 between US Highway 169 and McGregor

Project ST extends approximately 14 miles along TH 210 between US 169 and McGregor. Daily traffic volumes range from approximately 2,500 at the west end to 3,000 near McGregor. The primary issue along this corridor is narrow shoulders. The proposed improvements include widening the existing 2-foot shoulders to 10-feet (Figure 20). 10-foot shoulders are proposed rather than 8-foot shoulders because TH 210 is designated as a principal arterial. As part of future project development efforts, bypass lanes should also be considered at appropriate locations to improve travel safety. The proposed widening will result in spot right-of-way and wetland impacts along the corridor. The estimated cost is \$8.4 million.



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Project SS – Trunk Highway 73 between Moose Lake and Hibbing

Project SS extends approximately 75 miles along TH 73 between Moose Lake and Hibbing. The primary issue along this corridor is narrow shoulders. In addition there are segments with substandard (low speed) S-curves that result in increased safety concerns. Daily traffic volumes range from approximately 600 in the middle of the corridor to 3,800 near Moose Lake. The proposed improvements include widening the existing 2-foot shoulders to 8-feet (Figure 21). As part of future project development efforts, bypass lanes should also be considered at appropriate locations to improve travel safety. The proposed shoulder widening will result in spot right-of-way and wetland impacts along the corridor. Additional enhancement options highlighted on Figure 20 include improving two sets of S-curves south of Cromwell. Accommodating the higher speed S-Curves would generate additional right-of-way and wetland impacts.

Another sub-option was considered at the northern set of S-curves that includes realigning TH 73 on a new north-south corridor that would connect with TH 210 on the western edge of Cromwell. TH 73 would then follow TH 210 to reconnect with the existing TH 73 alignment extending north from TH 210. After reviewing potential impacts associated with this option, it was discarded from further consideration because it would result in very significant wetland impacts.

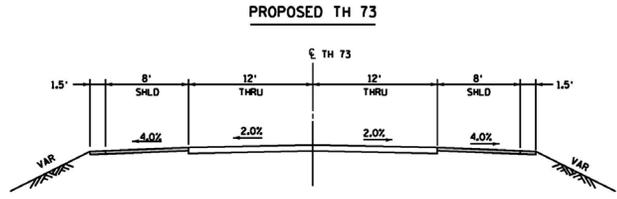
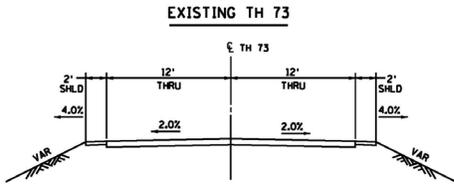
The estimated cost to widen the TH 73 shoulders is \$40 million. The illustrated S-curve improvements range from \$3.1 million to \$3.3 million.

FIGURE 21

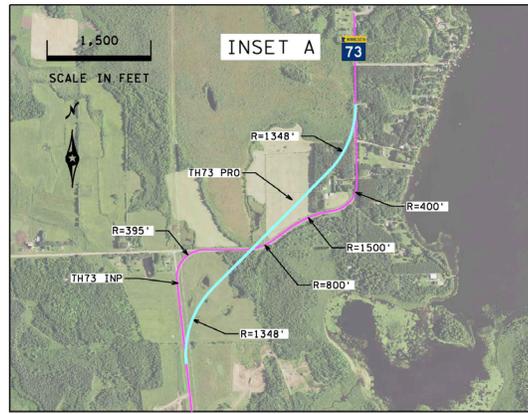
LEGEND
 SHOULDER WIDENING

General Notes:
 - Cost Estimate: \$40.0 Million
 - Widen existing 2' shoulders to 8'

32,000
 SCALE IN FEET



IMPROVE DEFICIENT
 HORIZONTAL CURVES



ESTIMATED ADDITIONAL COST FOR INSET A: \$3,300,000



ESTIMATED ADDITIONAL COST FOR INSET B: \$3,100,000

**CONCEPTUAL
 DRAFT**

Project SCB – Mesaba Avenue in Duluth

Project SCB is located along Mesaba Avenue between I-35 and TH 194 near downtown Duluth. The issue identified along this corridor is the need for swing-away traffic signals to accommodate oversized trucks (Figure 22). Replacing the nine traffic signal arms extending over Mesaba Avenue is estimated to cost approximately \$900,000.

FIGURE 22



LEGEND

 SWING AWAY TRAFFIC SIGNAL

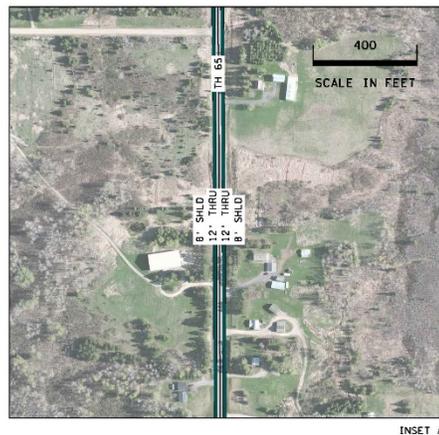
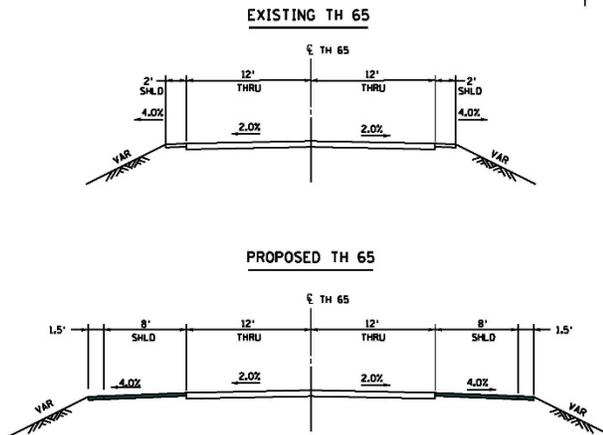
General Notes:
- Estimated Cost: \$900,000
- Install swing away traffic signals

**CONCEPTUAL
DRAFT**

Project DBY – Trunk Highway 65 between Nashwauk and County Road 540

Project DBY extends approximately 11 miles along TH 65 north from Nashwauk to just north of County Road 540. Daily traffic volumes range from 740 at the north end to 2,600 near Nashwauk. The primary issue along this corridor is narrow shoulders. The proposed improvements include widening the existing 2-foot shoulders to 8-feet (Figure 23). As part of future project development efforts, bypass lanes should also be considered at appropriate locations to improve travel safety. The proposed widening will result in spot right-of-way and wetland impacts along the corridor. The estimated cost is \$5.5 million.

FIGURE 23



General Notes:
 - Estimated Cost \$5.5 Million
 - Widen existing 2' shoulders to 8'



**CONCEPTUAL
DRAFT**

Project D49 – CSAH 13 (Midway Road)/St. Louis River Road Intersection near Duluth

This project focuses on issues associated with the Midway Road/St. Louis River Road intersection. The key issue is the skewed at-grade railroad crossing that extends directly through the intersection. There are crossing gates for all the intersection approaches, however the relatively high traffic volumes on Midway Road (7,300 ADT) create an unsafe and very undesirable existing condition.

Two alternatives were developed to address the identified issues for Project D49:

- Alternate 1 (Figure 24) - includes constructing a bridge to carry Midway Road over St. Louis River Road and the railroad tracks. This design eliminates the connection between Midway Road and St. Louis River Road. As a result, travelers would need to find alternate means to connect between the two roadways and/or their ultimate destinations, likely using US Highway 2 to the east. This impact is mitigated somewhat given St. Louis River Road daily volumes are only 540, therefore there is not a large amount of turning traffic at the existing intersection. This alternate requires little to no right-of-way acquisition or wetland impacts. The estimated cost for Alternate 1 is \$4.5 million.
- Alternate 2 (Figure 25) – this option includes realigning Midway Road to the west and creates a new at-grade intersection with St. Louis River Road. The realigned Midway Road would cross the railroad on a new bridge located southwest of the existing intersection. This alternate retains the direct connection between Midway Road and St. Louis River Road but requires a substantial amount of new right-of-way. The alternate avoids wetland impacts. The estimated cost for Alternate 2 is \$4.8 million.

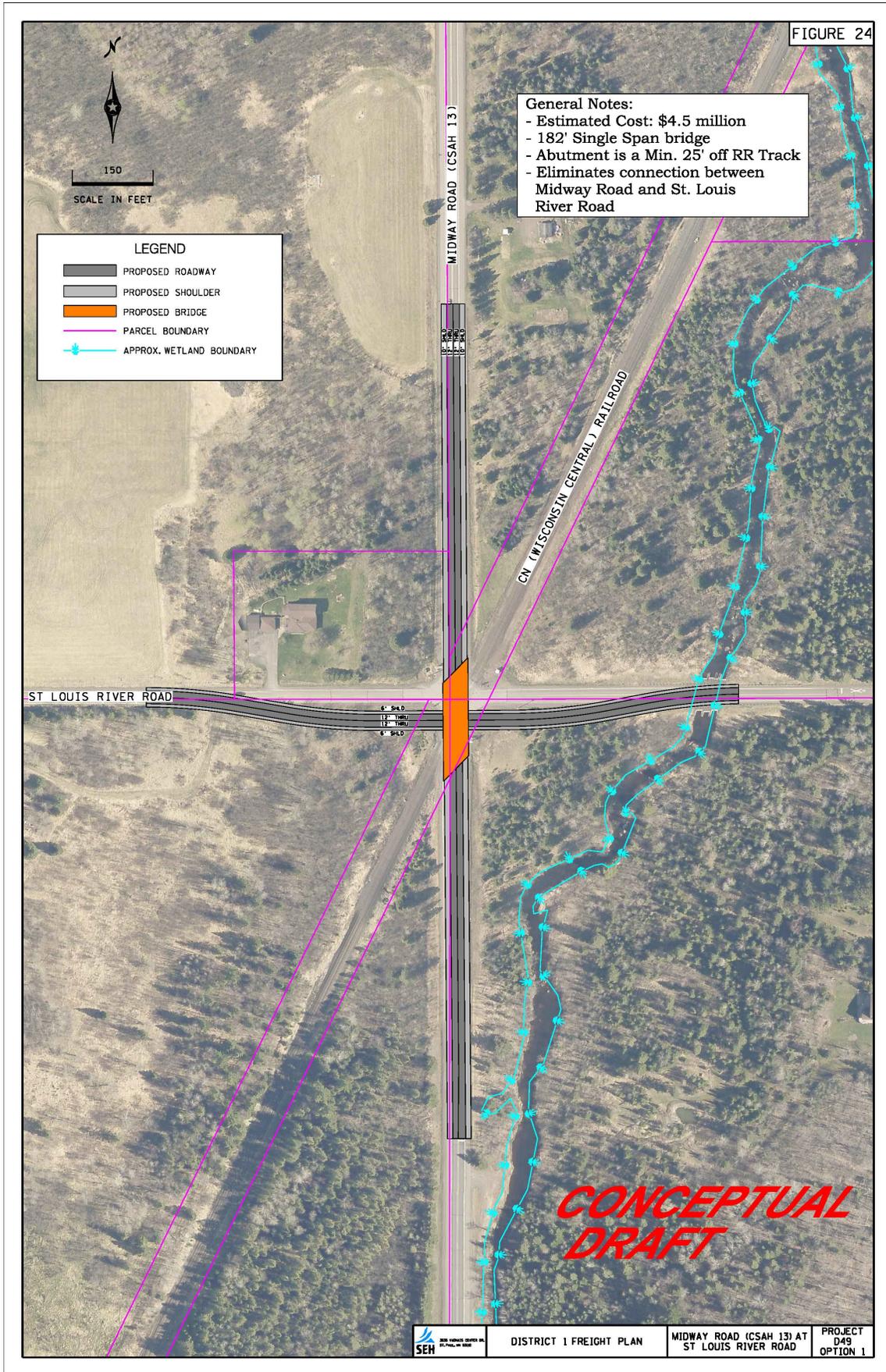


FIGURE 25

LEGEND

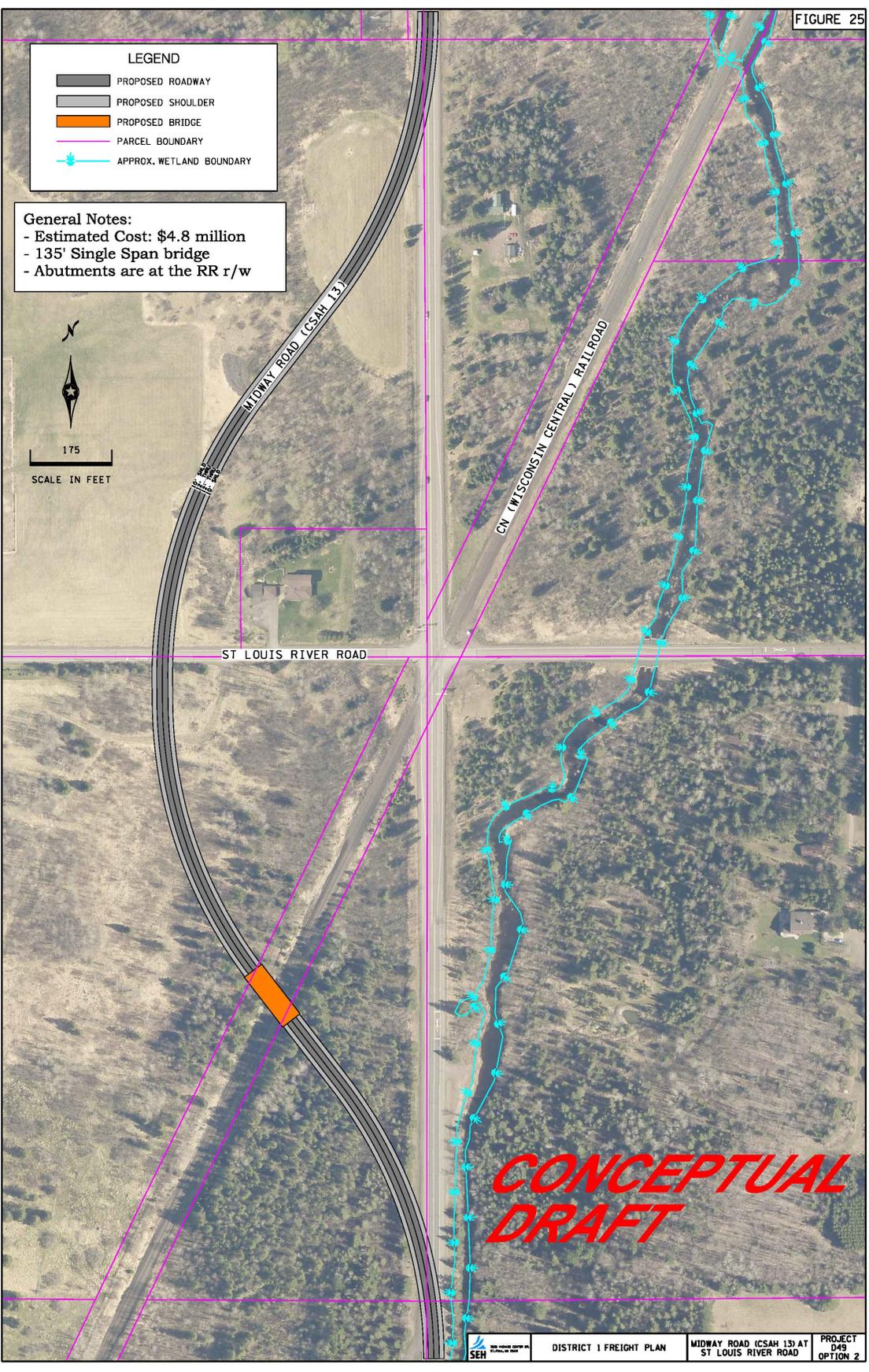
-  PROPOSED ROADWAY
-  PROPOSED SHOULDER
-  PROPOSED BRIDGE
-  PARCEL BOUNDARY
-  APPROX. WETLAND BOUNDARY

General Notes:

- Estimated Cost: \$4.8 million
- 135' Single Span bridge
- Abutments are at the RR r/w



175
SCALE IN FEET



CONCEPTUAL DRAFT

	DISTRICT 1 FREIGHT PLAN	MIDWAY ROAD (CSAH 13) AT ST LOUIS RIVER ROAD	PROJECT D45 OPTION 2
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Project S988 – US Highway 53/CSAH 332 Intersection near International Falls

This project focuses on operational issues associated with truck traffic at the US Highway 53/CSAH 332 intersection. ADT on US 53 is 2,700 and 1,100 on CSAH 332. Observations at this location have identified an issue with loaded logging trucks traveling east on CSAH 332 occasionally traveling across US 53 without coming to a complete stop. This issue is likely associated with the down-grade of CSAH 332 approaching US 53.

Two alternates were identified for consideration:

- Alternate 1 (Figure 26) – This improvement includes adding a “Stop Ahead” flashing sign for eastbound traffic. The estimated cost for Alternate 1 is \$18,000.
- Alternate 2 (Figure 27) – This option includes constructing a roundabout. This design would allow trucks the opportunity to avoid making a complete stop unless there are vehicles in the roundabout. This option would likely require some right-of-way acquisition in the northwest quadrant of the intersection. The estimated cost for Alternate 2 is \$1.8 million.

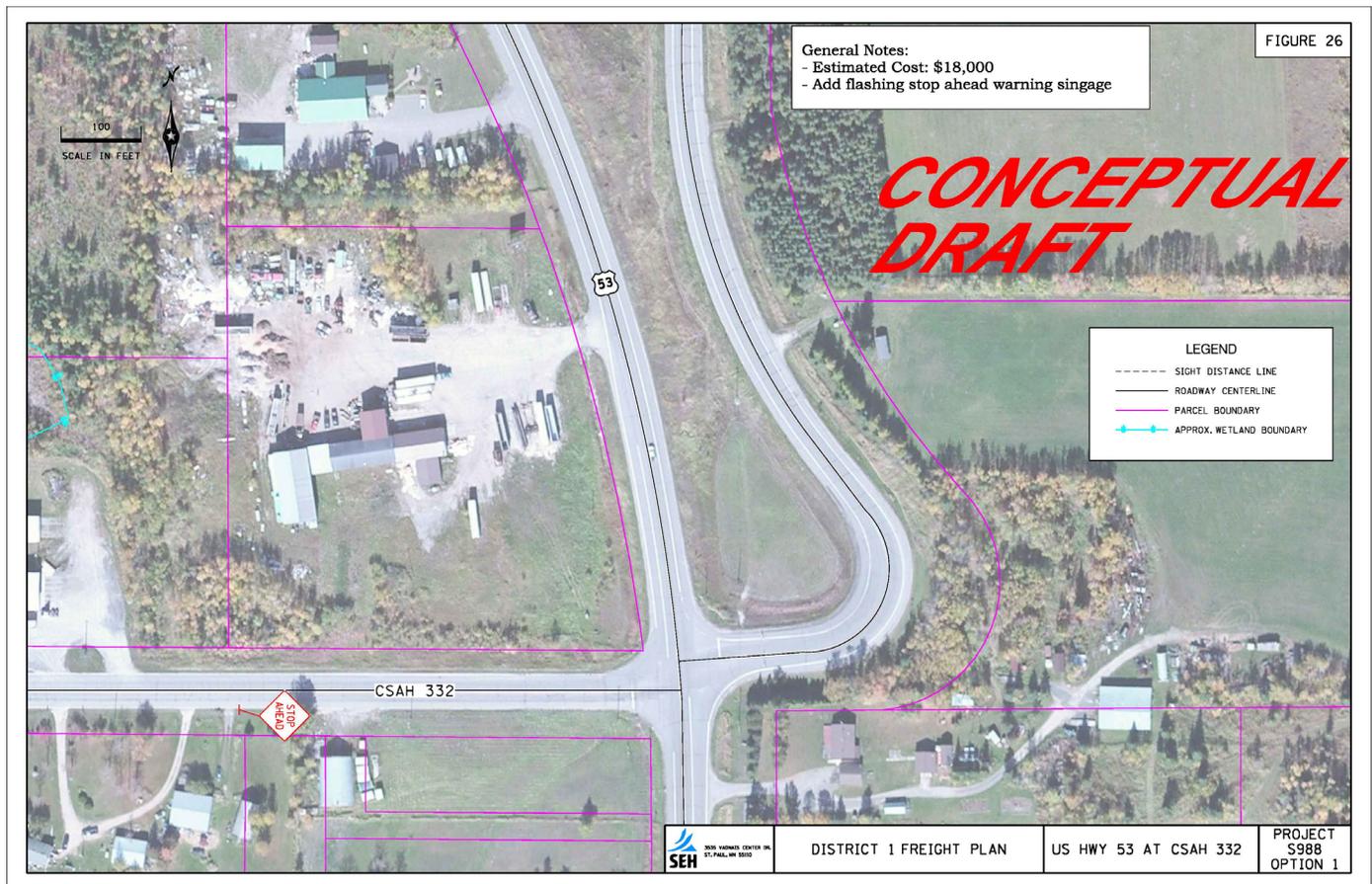
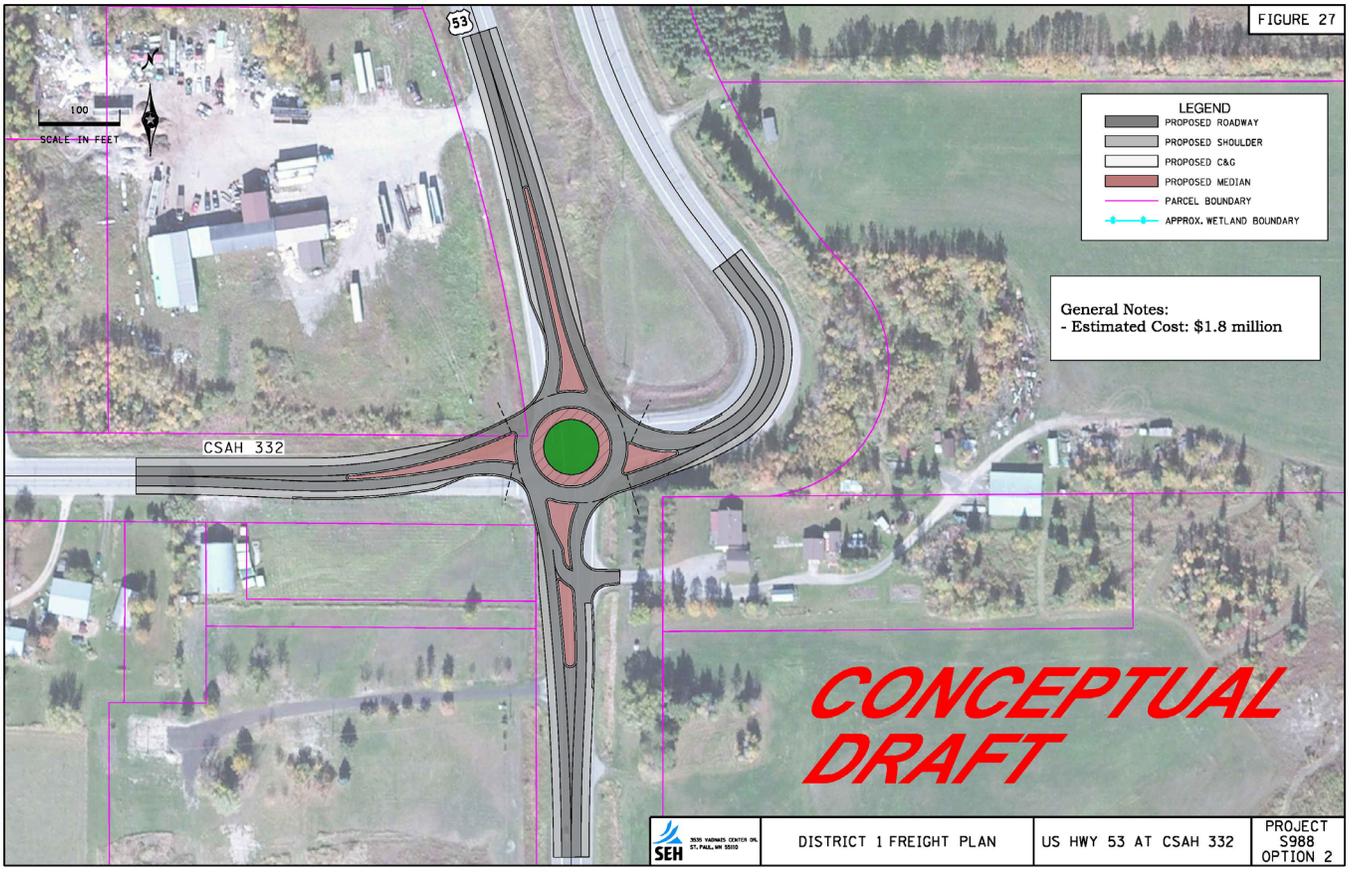


FIGURE 27



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