Bridge Scoping and Cost Estimating Assessment
Bridge Replacement or Major Rehabilitation **(Form B)**

Date:12/5/17

Trunk Highway(s): T.H. 25	**S.P.:** 1811-35	**S.A.P:** N.A.	**Letting Date: 1/1/22**
County(s): Crow Wing	**City(s):** Brainerd		**District(s):** 3
Location: T.H. 25 Over the B.N.S.F. Railroad in Brainerd			

Proposed Bridge Information:

Date of Assessment:12/5/17

Work Type:01	Number of Bridges in Project:1	Proposed Bridge No:18___		Inplace Bridge No: 9099
Feature Crossed: B.N.S.F. Railroad	Bridge Type: 501	Deck Area: 11,130 Sq. Ft.	Bridge Length: 236.90 Lin. Ft.	Bridge Width :47 Lin. Ft.
No. of Spans: 3	No. of Lanes on Proposed Bridge 2	Inside Shoulder Width 10 Lin. Ft.		Outside Shoulder Width 10 Lin. Ft.
Type of Barrier:Type S	No. of Barriers:2	Median Width N.A. Lin. Ft.		
Sidewalk Width N.A. Lin. Ft. ☐ One Side ☐ Both Sides		Trail Width N.A. Lin. Ft. ☐ One Side ☐ Both Sides		
Abutment Type: : ☐ Tall Parapet ☐ Medium Parapet ☒ Low Parapet ☐ Integral		Pier Type: : ☐ Wall ☒ Column ☒ w / Strut ☐ Encased Pile		
Design Organization: ☒ Mn/DOT ☐ Consultant ☐ Partnership ☐ State Aid ☐ By Others ☐ Border Bridge ☐ Design Build				
Comments: assumes approximate 9" grade raise to the proposed T.H. 25 profile.				

Bridge Estimating Unit: (All Estimated Costs in Year of Estimate Dollars)

Year of Estimate: 2017

Estimated Proposed Structure Cost: $2,020,000.00	Estimate Includes : ☒ Mobility ☒ Aesthetics ☐ Staging
Inplace Structure Removal Cost : $130,000.00	Type (Level) of Estimate :☐ Planning Level ☒ Scoping Level
Foundations: ☐Borings ☒ Inplace Structure ☐ None Available	
Estimator: L.G.A.	Date: 12/05/17
Comments: Concept #1 (No Trail): $2,020,000.00 + $130,000.00 = $2,150,000.00. Concept #2 (10'-0" Trail): $2,520,000.00 + $130,000.00 = $2,650,000.00.	

Bridge Hydraulics Unit:

New Bridge ☐ Yes ☐ No		New Culvert: ☐ Yes ☐ No	
Bridge Survey Available: ☐ Yes ☐ No	Structure Skew Angle Degrees	High Water of Record Elevation Feet ☐ Not Available	
Low Bridge Elevation Feet ☐ Not Available		Flow Line Elevation Feet ☐ Not Available	
Approximate Sq. Ft. of Waterway Available Below Feet ☐ Not Available			
Rip Rap Type: : ☐ Yes ☐ No Class	Rip Rap Thickness: Inches	Granular Filter: ☐ Yes ☐ No Inches	
Comments:			

Bridge Office Contact:

Name: Lawrence Aamodt
Title: Engineering Specialist Senior
Address: 3485 Hadley Ave. N.
Oakdale, MN 55128-3307
Phone: 651-366-4572
Fax: 651-366-4461
Email: larry.aamodt@state.mn.us

List of Attachments:

☐ Preliminary Waterway Analysis

Preliminary Sketches: ☐ Attached ☐ Not Available

L.R.F.D. Design Tables:

Other Attachments: Conceptual Sketches.

Assessment Information Distribution List:

Name: Eric Schiller	Name: Daniel Prather	Name: Jeff Southward
Title: Project Manger	Title: Preliminary Bridge Plans Engineer	Title: Programs and Estimates Supervisor
Address: 7694 Industrial Park Road Baxter, MN 56425-8096	Address: 3485 Hadley Ave. N. Oakdale, MN 55128-3307	Address: 3485 Hadley Ave. N. Oakdale, MN 55128-3307
Phone: 218-828-5821	Phone: 651-366-4457	Phone: 651-366-4452
Fax: 218-828-5823	Fax: 651-366-4497	Fax: 651-366-4497
Email: eric.schiller@state.mn.us	Email: dan.prather@state.mn.us	Email: jeff.southward@state.mn.us

NOTE:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

① ℄ T.H. 25 (BRPRO) P.O.T. STA. 32+ . . =
℄ INPLACE MAIN TRACK ( ) P.O.T. STA. 1684+ .
X =
Y =

② ℄ T.H. 25 (BRPRO) P.O.T. STA. 32+ . . =
℄ INPLACE PASSING TRACK ( ) P.O.T. STA. 1684+ .
X =
Y =

APPROXIMATE ℄ INPLACE PASSING TRACK ( )

APPROXIMATE ℄ INPLACE MAIN TRACK ( )

APPROXIMATE RAILROAD RIGHT-OF-WAY

INPLACE BRIDGE NO. 9099
A THREE SPAN STEEL BEAM STRUCTURE SUPPORTED ON TREATED TIMBER PILING BUILT IN 1957 REMODELED IN 1981 TO BE REMOVED UNDER THE BRIDGE PORTION OF THE CONTRACT.

6183 6184

60.7702'±

236.9026'±

115.3622'±

37° 34' 59.8" (TYP.)

END BRIDGE STA. 33+66.6513±

T.S. STA. 38+39.800
X = 515,447.225
Y = 174,218.804

℄ T.H. 25 (BRPRO)

STABILIZED AGGREGATE SLOPE PAVING (TYP.)

APPROXIMATE RAILROAD RIGHT-OF-WAY

1'-6" 22'-0" 47'-0" 44'-0" 22'-0" 1'-6" 2'-0" (TYP.)

CRITICAL VERTICAL CLEARANCE PT. "A"

CRITICAL VERTICAL CLEARANCE PT. "B"

BEGIN BRIDGE STA. 31+29.1488±
AZ = 102° 22' 36.0"

P.T. STA. 31+39.497
X = 515,463.088
Y = 174,368.905

100'-0"

GENERAL ELEVATION

0 10'

800.000' V.C.
V.P.C. STA. 27+00.000
EL. 1227.866
V.P.I. STA. 31+00.000
EL. 1236.186
V.P.C. STA. 35+00.000
EL. 1236.586
G1 = +2.080%
G2 = +0.100%

23'-0" MIN.
27.072'± CRITICAL VERTICAL CLEARANCE PT. "A"
27.506'± CRITICAL VERTICAL CLEARANCE PT. "B"
23'-0" MIN.
2'-0" MIN. (TYP.)
2'-6" (MIN.) (TYP.)

PROFILE GRADE (BRPRO)
GUTTERLINE

EL. 1240
EL. 1230
EL. 1220
EL. 1210
EL. 1200
EL. 1190

SPAN 1
APPROXIMATE ℄ INPLACE MAIN TRACK ( )
SPAN 2
SPAN 3
APPROXIMATE ℄ INPLACE PASSING TRACK ( )

4'-0"± 25'-0" MIN. CLEAR 25'-0" MIN. CLEAR 4'-0"±

WEST ABUTMENT
ABT. 2
EAST ABUTMENT
ABT. 2

STABILIZED AGGREGATE SLOPE PAVING (TYP.)

BACKSLOPE CONTROL POINT
NORTH SIDE:
STA. 32+ . ±
EL. . ±
SOUTH SIDE:
STA. 32+ . ±
EL. . ±

PROFILE GRADE ( )
PROFILE GRADE ( )
PROFILE GRADE ( )
PROFILE GRADE ( )
PROFILE GRADE ( )

WEST RAIL ( )
EAST RAIL ( )
EAST RAIL ( )
WEST RAIL ( )

9'-0" 3'-0" 18'-0" 30'-6" MAX.
9'-0" 3'-0" 18'-0" 30'-6" MAX.

GENERAL ELEVATION

0 10'

TRANSVERSE SECTION

47'-0"
44'-0"
1'-6" 10'-0" 12'-0" 12'-0" 10'-0" 1'-6"
℄ T.H. 25 (BRPRO)
PROFILE GRADE (BRPRO)
CONCRETE BARRIER 36" (TYPE S, TL-4) (TYP.)
2.0% 2.0% 2.0% 2.0%
0.44'
3'-1" 3'-1"
5 SPACES @ 8'-2" = 40'-10"
MN45 PRESTRESSED CONCRETE BEAMS

0 5'

EXISTING GROUND PROFILE
20' LT. — — — —
℄ T.H. 25 — - — -
20' RT. —— ——

DEPTH OF STRUCTURE:
4'-10" GUTTER TO LOW BRIDGE
MN45 P.C.B. 6± BEAM LINES

DESIGN DATA

DESIGNED IN ACCORDANCE WITH 20__
AND CURRENT INTERIM AASHTO
LRFD BRIDGE DESIGN SPECIFICATIONS.
HL-93 LIVE LOAD.
DEAD LOAD INCLUDES 20 POUNDS PER SQUARE FOOT ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.
MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 KSI CONCRETE
fy = 60 KSI PLAIN AND EPOXY COATED BARS
fy = 75 KSI STAINLESS STEEL BARS
n = 8 FOR REINFORCEMENT BARS
PRETENSIONED CONCRETE:
f'c = __ KSI CONCRETE (MAX.)
fpu = 270 KSI LOW RELAXATION STRANDS
n = 1 FOR PRETENSIONING STRANDS
0.75 fpu FOR INITIAL PRESTRESS
DESIGN SPEED:
OVER = 50 M.P.H. UNDER = N.A. M.P.H.
APPROXIMATE DECK AREA 11,130 SQ. FT.

20__ PROJECTED TRAFFIC VOLUMES

ROADWAY OVER		ROADWAY UNDER
4,370 (2008)	A.A.D.T.	N.A.
	D.H.V.	N.A.
262 (2008)	H.C.A.D.T.T.	N.A.

NOTES:

NUMBER AND SPACING OF BEAMS IS APPROXIMATE AND WILL BE SET IN FINAL DESIGN.

TRAFFIC TO BE DETOURED DURING CONSTRUCTION.

HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.

SEE SHEET __ FOR INPLACE UTILITIES.

BRIDGE APPROACH PANEL LAYOUT STANDARDS 5-297.224 AND 5-297.225 APPLY.

BRIDGE APPROACH TREATMENT STANDARD 5-297.233 APPLIES.

PROPOSED TYPE OF STRUCTURE

DECK:
MN45 PRESTRESSED CONCRETE BEAMS
NO SEPARATE CONCRETE WEARING COURSE
ALL BARS EPOXY COATED
SIMPLE SPANS

SUBSTRUCTURE:
PARAPET ABUTMENTS SUPPORTED ON

PIERS SUPPORTED ON

AESTHETICS:
LEVEL

MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL SKETCH #1
BRIDGE NO. 9099

T.H. 25 OVER B.N.S.F. RAILROAD
IN BRAINERD
RAILROAD MILEPOST 117.135

SEC. 19 TWP. 45 N. R. 30 W.
CITY OF BRAINERD CROW WING CO.

DATE: _____

NOT FINAL

STATE BRIDGE ENGINEER

ROAD DESIGN UNIT: - -
RESIDENT ENGINEER: - -
BRIDGE DESIGN UNIT: 651-366-

JOB NO. T3A842 MINNESOTA PROJECT NO. - STATE PROJECT NO. 1811-9099 (T.H. 25 = 018) SHEET NO. 1 OF 1 SHEETS 9099 L.G.A.

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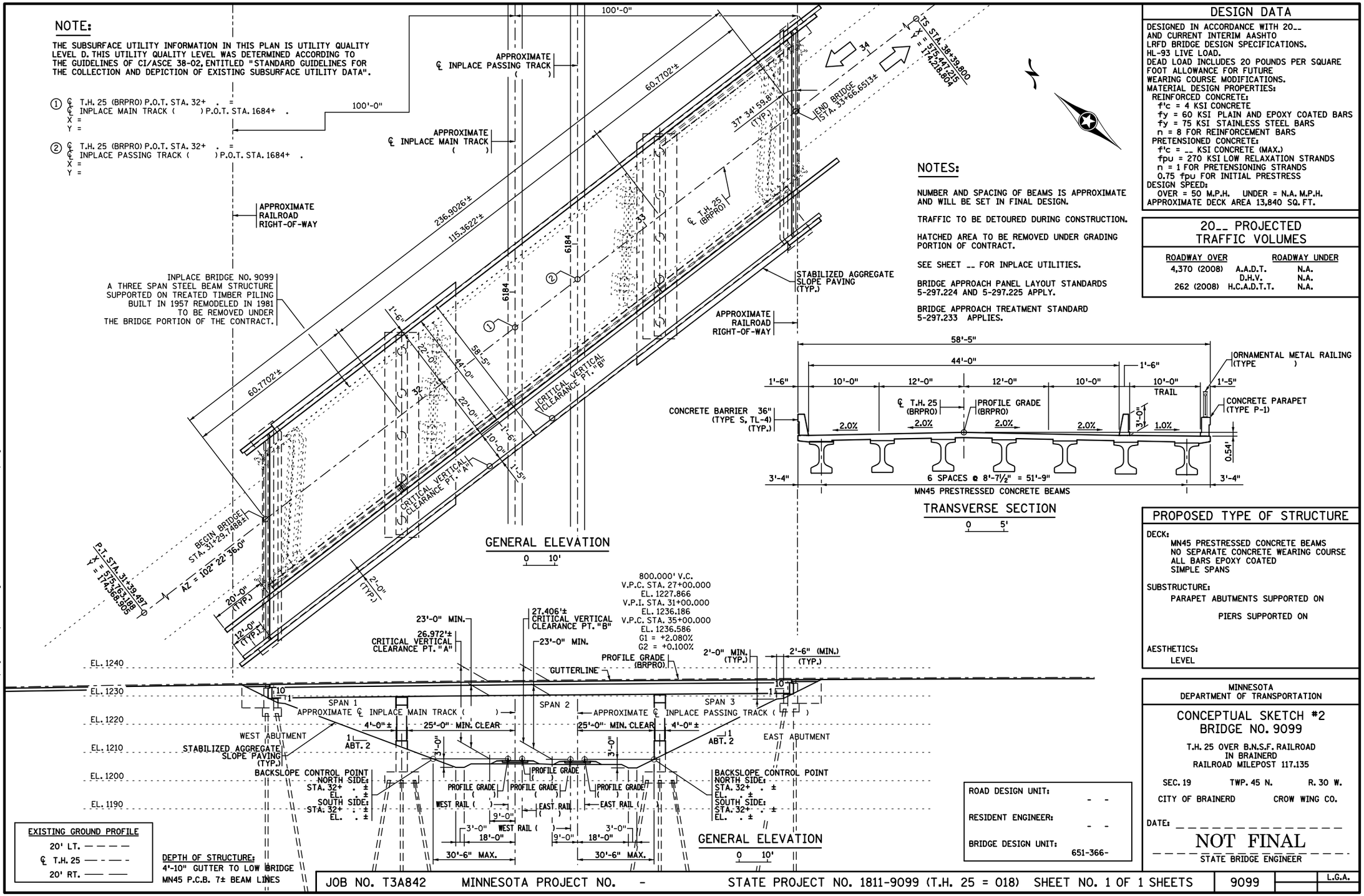
NOTE:

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

① ℄ T.H. 25 (BRPRO) P.O.T. STA. 32+ . =
℄ INPLACE MAIN TRACK ( ) P.O.T. STA. 1684+ .
X =
Y =

② ℄ T.H. 25 (BRPRO) P.O.T. STA. 32+ . =
℄ INPLACE PASSING TRACK ( ) P.O.T. STA. 1684+ .
X =
Y =



GENERAL ELEVATION
0 10'

TRANSVERSE SECTION
0 5'

800.000' V.C.
V.P.C. STA. 27+00.000
EL. 1227.866
V.P.I. STA. 31+00.000
EL. 1236.186
V.P.C. STA. 35+00.000
EL. 1236.586
G1 = +2.080%
G2 = +0.100%

GENERAL ELEVATION
0 10'

EXISTING GROUND PROFILE
20' LT. — — — —
℄ T.H. 25 — - — - —
20' RT. —— ——

DEPTH OF STRUCTURE:
4'-10" GUTTER TO LOW BRIDGE
MN45 P.C.B. 7± BEAM LINES

NOTES:

NUMBER AND SPACING OF BEAMS IS APPROXIMATE AND WILL BE SET IN FINAL DESIGN.

TRAFFIC TO BE DETOURED DURING CONSTRUCTION.

HATCHED AREA TO BE REMOVED UNDER GRADING PORTION OF CONTRACT.

SEE SHEET __ FOR INPLACE UTILITIES.

BRIDGE APPROACH PANEL LAYOUT STANDARDS 5-297.224 AND 5-297.225 APPLY.

BRIDGE APPROACH TREATMENT STANDARD 5-297.233 APPLIES.

DESIGN DATA

DESIGNED IN ACCORDANCE WITH 20__ AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
HL-93 LIVE LOAD.
DEAD LOAD INCLUDES 20 POUNDS PER SQUARE FOOT ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS.
MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 KSI CONCRETE
fy = 60 KSI PLAIN AND EPOXY COATED BARS
fy = 75 KSI STAINLESS STEEL BARS
n = 8 FOR REINFORCEMENT BARS
PRETENSIONED CONCRETE:
f'c = __ KSI CONCRETE (MAX.)
fpu = 270 KSI LOW RELAXATION STRANDS
n = 1 FOR PRETENSIONING STRANDS
0.75 fpu FOR INITIAL PRESTRESS
DESIGN SPEED:
OVER = 50 M.P.H. UNDER = N.A. M.P.H.
APPROXIMATE DECK AREA 13,840 SQ. FT.

20__ PROJECTED TRAFFIC VOLUMES

ROADWAY OVER		ROADWAY UNDER
4,370 (2008)	A.A.D.T.	N.A.
	D.H.V.	N.A.
262 (2008)	H.C.A.D.T.T.	N.A.

PROPOSED TYPE OF STRUCTURE

DECK:
MN45 PRESTRESSED CONCRETE BEAMS
NO SEPARATE CONCRETE WEARING COURSE
ALL BARS EPOXY COATED
SIMPLE SPANS

SUBSTRUCTURE:
PARAPET ABUTMENTS SUPPORTED ON
PIERS SUPPORTED ON

AESTHETICS:
LEVEL

MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONCEPTUAL SKETCH #2
BRIDGE NO. 9099

T.H. 25 OVER B.N.S.F. RAILROAD
IN BRAINERD
RAILROAD MILEPOST 117.135

SEC. 19 TWP. 45 N. R. 30 W.
CITY OF BRAINERD CROW WING CO.

ROAD DESIGN UNIT: - -
RESIDENT ENGINEER: - -
BRIDGE DESIGN UNIT: 651-366-

DATE: _____

NOT FINAL
STATE BRIDGE ENGINEER

JOB NO. T3A842 MINNESOTA PROJECT NO. - STATE PROJECT NO. 1811-9099 (T.H. 25 = 018) SHEET NO. 1 OF 1 SHEETS | 9099 | L.G.A.

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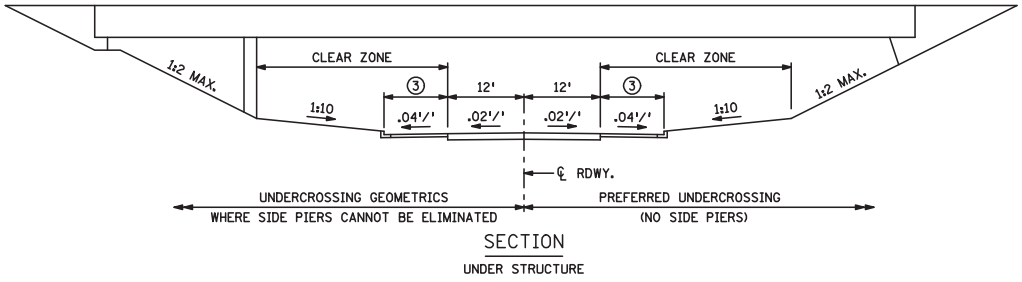
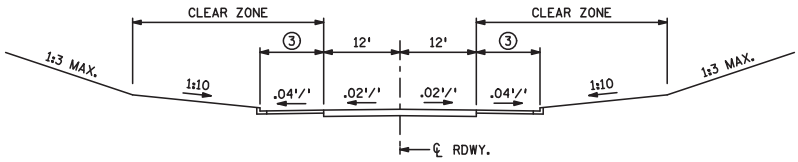
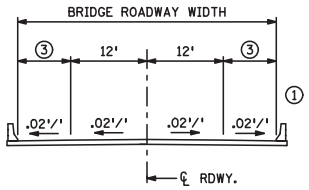


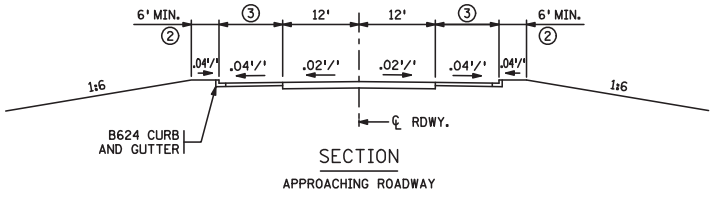
SECTION
UNDER STRUCTURE



SECTION
APPROACHING ROADWAY



SECTION
BRIDGE DECK



SECTION
APPROACHING ROADWAY

① SEE FIG. 2.1.4.7 WHERE SIDEWALKS ARE WARRANTED.
② INCREASE AS NECESSARY TO MATCH SIDEWALK NEEDS.
③ VARIES 10' TYPICAL.

Figure 2.1.4.2
Desirable Geometrics
2-Lane Highway (Urban)

Table 2
MINIMUM SHOULDER WIDTHS – ARTERIALS

HIGHWAY TYPE				MINIMUM WIDTH (FEET) [1]			
				Median (or Left)		Outside (or Right) [10]	
				Usable	Paved	Usable	Paved [2][3]
Arterials (Rural) [4]	2 Lanes	ADT < 400				4	2
		ADT 400 - 1500				6	2 - 6
		ADT 1500 - 2000				6	4 - 6
		ADT > 2000				8	8 [5]
	Divided 4-lanes			4	4	8	8 [5]
	Divided 6-lanes			8	8 [5]	8	8 [5]
Arterials (Urban / Suburban) [8]	2 Lanes	≤ 45 mph	With Parking [9]				7 - 10 [6]
			Without Parking				Curb Reaction [7]
		> 45 mph	Without Parking				8 [5]
	4 + Lanes	≤ 45 mph	With Parking [9]				7 - 10 [6]
			Without Parking				Curb Reaction [7]
		> 45 mph	Without Parking				8 [5]
	Divided (4 or more lanes)			Curb Reaction [7]		(See Above)	

(1) In cases where a wall or median barrier is adjacent to the shoulder, the AASHTO Roadside Design Guide should be consulted for guidance in selecting additional lateral clearance from the edge of the traveled way to the base of the wall or barrier. Where bicycles and pedestrians need to be accommodated, a 5 foot minimum paved offset is recommended.

(2) Preferably, usable shoulders on arterials should be paved; however, where traffic volumes are low or a narrow section is needed to reduce construction impacts, the paved shoulder width may be a minimum of 2 feet provided that bicycle use is not intended to be accommodated on the shoulder.

(3) To accommodate bicycles and pedestrians outside the travel lane, the minimum paved area of 4 feet must be provided. Refer to the AASHTO Guide for the Development of Bicycle Facilities, The MnDOT Bikeway Facility Design Manual, and the MnDOT Road Design Manual.

(4) A usable shoulder width of 4 feet or greater is acceptable adjacent to passing or climbing lanes. A 4 foot minimum paved shoulder is needed for bicycles.

(5) 10 foot paved shoulder should be considered for principal arterials when there are no constraining elements.

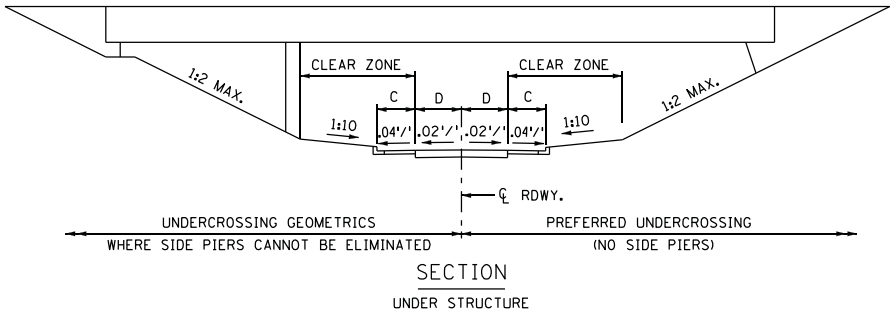
(6) To accommodate bicyclists and passenger car parking, a shoulder width of 12 to 14 feet is desirable. Refer to AASHTO Guide for the Development of Bicycle Facilities and the MnDOT Bikeway Facility Design Manual.

(7) Refer to Table 4; Minimum Curb Reaction Distance.

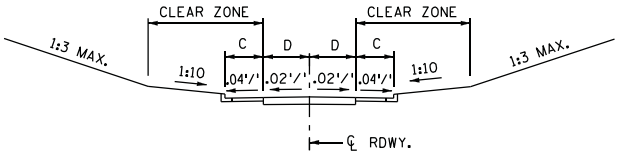
(8) Parallel parking may be considered as long as the capacity provided by the through lanes is not unduly restricted. However, parking is highly undesirable on roadways with a design speed greater than 45 mph.

(9) ADA guidelines concerning parking must be taken into consideration. Refer to the MnDOT ADA guidelines.

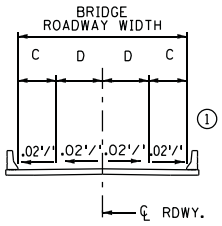
(10) Where pedestrian facilities are to be accommodated on the shoulder, refer to the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities, and the MnDOT Road Design Manual.



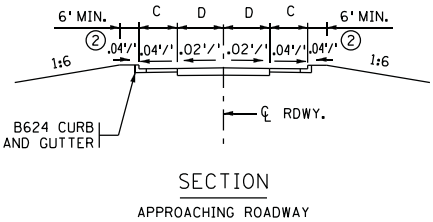
SECTION
UNDER STRUCTURE



SECTION
APPROACHING ROADWAY



SECTION
BRIDGE DECK



SECTION
APPROACHING ROADWAY

NOTES:

MINIMUM BRIDGE ROADWAY WIDTH SHOULD MATCH APPROACH ROADWAY WIDTH MEASURED FROM GUTTER TO GUTTER.

MINIMUM SHOULDER WIDTH ON BRIDGES IS 4'-0"

① SEE FIG. 2.1.4.7 WHERE SIDEWALKS ARE WARRANTED.

② INCREASE AS NECESSARY TO MATCH SIDEWALK NEEDS.

C- REFER TO TECHNICAL MEMO 12-12-TS-06 SHOULDER WIDTH STANDARDS FOR STATE HIGHWAYS

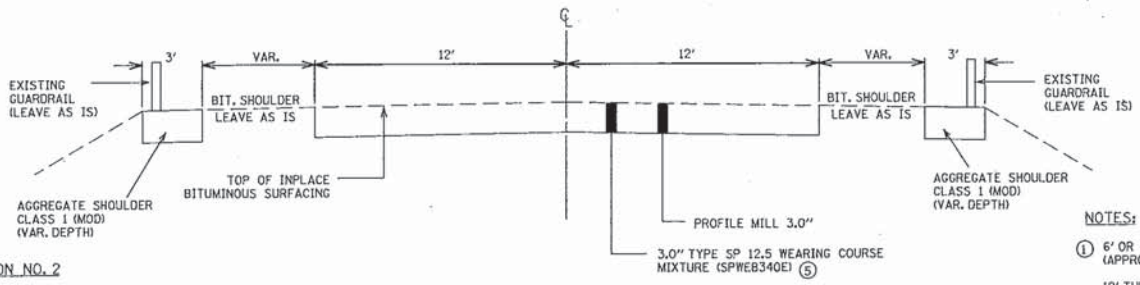
D- REFER TO TECHNICAL MEMO 12-07-TS-02 TRAVELED LANE WIDTH STANDARDS FOR STATE HIGHWAYS

Figure 2.1.4.2
Desirable Geometrics
2-Lane Highway (Urban)

TYPICAL SECTION NO. 1

T.H. 25

STA. 33+52.10 TO 53+00.00



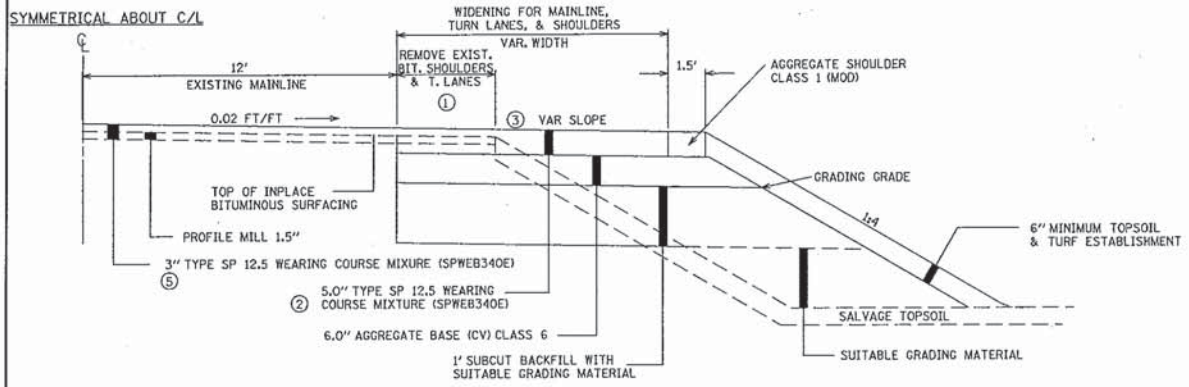
TYPICAL SECTION NO. 2

T.H. 25 & T.H. 18

WIDENING CONSTRUCTION

T.H. 25 STA. 53+00.00 TO 93+50.00

T.H. 18 STA. 111+18.00 TO 114+35.00

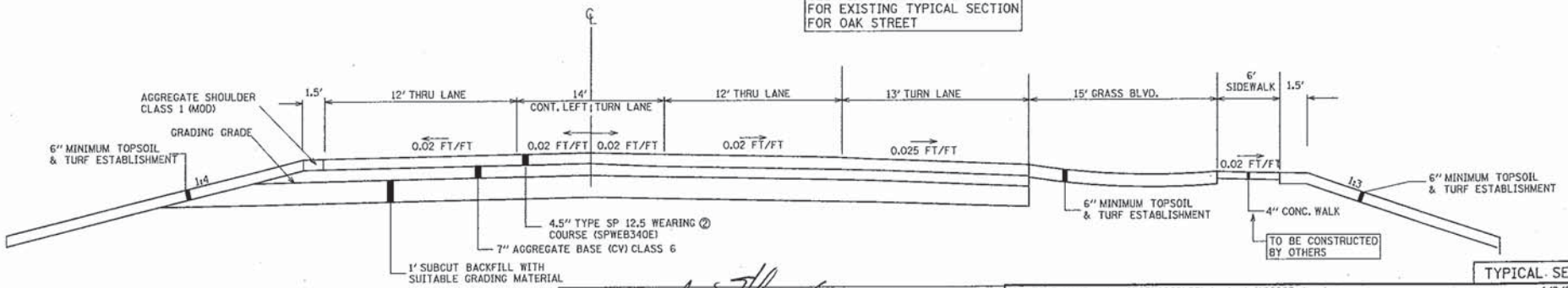


TYPICAL SECTION NO. 3

OAK STREET

STA. 108+30 TO 110+82

SEE PLAN S.A.P. 108-113-04 FOR EXISTING TYPICAL SECTION FOR OAK STREET



NOTES:

(1) 6' OR 10' BIT SHLD WIDTH (APPROXIMATELY 3" DEPTH)

12' TURN LANE WIDTH (APPROXIMATELY 6" DEPTH)

RIGHT TURN LANE ON T.H. 18 TO NORTHBOUND T.H. 25 TO REMAIN INPLACE, STA. 115+00 TO EAST PROJECT END

(2) TO BE CONSTRUCTED IN 3 LIFTS

(3) 0.02 FT/FT MAINLINE
0.025 FT/FT TURNLANES
0.04 FT/FT SHOULDERS

(4) CONSTRUCTED WITHIN SAP 108-113-04 PLAN

(5) TO BE CONSTRUCTED IN 2 LIFTS

CERTIFIED BY James T. Hinnebusch PROFESSIONAL ENGINEER REG NO. 24406

FILE NAME: s:\pr\25\1808\23\design\d180823_ts.dgn 4/2/2004

STATE PROJ. NO. 1808-23 ETC (T.H. 25) SHEET NO. 9 OF 88 SHEETS

TYPICAL SECTIONS