**Minnesota Department of Transportation**
**Metropolitan District**
1500 West County Road B-2
Roseville, MN 55113

# Memo

**TO:** Addressees

**FROM:** Mark J. Lindeberg
North Area Engineer

**DATE:** February 2, 2011

**SUBJECT:** Staff Approved Distribution of Geometric Layout for SP 6285-135 on I-694
Lexington Ave to west of old TH 10
Letting date of May 20, 2011

Attached is a file copy of the staff approved Level 1 Geometric Layout No. 2A and Profile No. 2 for the above referenced project. This project includes the replacement of 9 bridges along with the realignment of mainline I-694.

There are no railroads located within the limits of this project.

Addressees:

Tim Anderson – FHWA
Darwin Yasis – C.O.
Nancy Daubenberger – Bridge
Jennie Ross – OES (Layout Only)
Dave VanDeusen – Materials
Deb Anderson – R/W (Layout Only)
Tim Donovan – PreDesign
Gayle Gedstad – Traffic (Layout Only)
Terry Maurer – Arden Hills
Jim Tolaas – Ramsey County

An Equal Opportunity Employer

LAYOUT HISTORY

In 1959, grading for the T.H. 694/T.H. 10, T.H. 51 (Snelling), Hamline Avenue interchange was started under S.P. 6285-02. The various bridges in the interchange were constructed in 1959, 1960 and 1961. Paving was done in 1961 under S.P. 6285-24.

The bridges are reaching the end of their useful life, and need to be replaced.

In 2007, layouts were prepared showing T.H 694 reconstruction between T.H. 35E and T.H. 35W, with 4 through lanes in each direction. Funding constraints did not allow the project to move forward.

Replacement of the bridges in the interchange must happen by 2014. Because the 2007 layout was too costly, less expensive ideas were discussed.

A large number of interchange concepts were drawn and considered. After input from internal and external groups, this version was selected.

May 2010 - Layout submitted for signatures.

June 22, 2010 - Layout 1 is staff approved.
Received Review Comments from Geometric Design Support Unit.
Corrected errors in Traffic Projection diagram, added curb & gutter type to loop typical section, removed inplace staioning and ticks where pavement will be replaced, added tick marks at beginning and end of tapers, labeled radius of transition curve at beginning of N. Loop, added circles to identify PC and PT of NB Snelling/Hamline.

July 7, 2010 - Review Comment Memorandum issued.

August 2010 - Changes to layout:
Added tic marks at beginning and end of tapers, labeled curb types, changed design speed of T.H. 51 to 50 mph, modified alignments at South end of T.H. 51, added signal system at Hamline and County Road F, replaced transition curves on loops to spirals, changed intersection angle of Co. Rd. F and Hamline, changed width of SB TH 51 to 16 feet, modified alignment of EB 694 to 'line up' with future third lane addition (in median), changed right shoulder of EB 694 to 12 feet (future second lane connection from SB 10 to EB 694), altered alignment of NB 10 to allow for no lane shift on two lane exit from WB 694 to NB 10 (as labeled on layout and alignment stored in database), modified connection from NB 10 to WB 694 from lane drop to exit ramp, altered alignment to Lexington entrance ramp (to NB 10), changed alignment of WB C/D (now labeled as NB 10) to a two degree curve, added curb at bottom of loops under bridges, changed loop design to urban, lengthened horizontal curve on EB 694 (near Old Hwy. 10) to 500 feet (R = 69,466.88'), removed 1:15 taper kink at exit ramp from EB 694 to SB Snelling, recalculated alignment of said exit ramp to comply with the open-road ratio of 1.5, revised location of retaining walls along EB 694 near SB 10.
Advanced Layout number to 1A.

October 2010 - Extended 694 reconstruction to the West (towards 35W) to the Easterly limits of SP 6285-109 & -110 (1990)
Advanced Layout number to 2.

November 23, 2010 - Layout 2 is staff approved.
Distribution Copy of layout is prepared combining Layout 1A and 2.
Advanced layout number to 2A.

LAYOUT No. 2A COPY No.
T.H. 694 VICINITY OF Arden Hills & Shoreview
FROM West of Old Highway 10 to Lexington Ave.
and on T.H.51 (Snelling Ave) & Hamline Ave.
Prepared November 2010 Scale: Hor. 1 inch = 100 ft.
By M. Lindeberg, TD, MR, CT, RR

The alignment and grades shown on this map are tentative and subject to change without notice.	Staff Approval Date: Nov. 23, 2010 🟥	The traffic volumes shown are estimated for year 2030 Metro District Planning Prepared April 2010

S.P. 6285-135 T.H. 694 A.J. 91758 PPMS Activity 1140
S.P. ____ T.H. ____ A.J. ____ PPMS Activity ____
S.P. ____ T.H. ____ A.J. ____ PPMS Activity ____
Copy To: ____ For: ____

DESIGN FILE: PW\Documents\Projects\DM_ROS\694\6285\135\Predesign\Alternatives\p6285135_gm2.dgn and p6285135_CL2.dgn
DATE: 31-JAN-2011 10:23

Level 1 LAYOUT APPROVAL

Programmed Letting Date April 11, 2011

Prepared By ____ 11-8 2010
District Design or Preliminary Design Engineer

Reviewed By ____ 11-8 2010
District Traffic Engineer

Reviewed By ____ 11/23 2010
State Geometrics Engineer

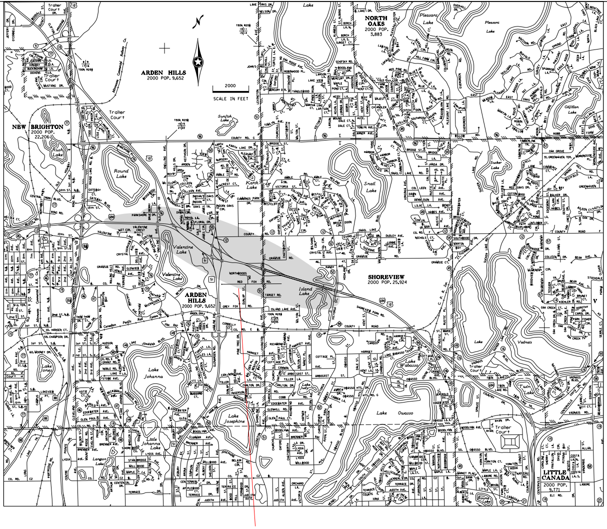
Approved By ____ 11/16 2010
Transportation District Engineer

Approved By ____ 11/23 2010
State Design Engineer

S.P. 6285-135 (T.H. 694)

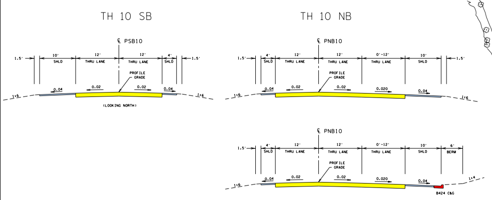
DATE 11-8-10 REG. NO. 24660

I HEREBY CERTIFY THAT THIS LAYOUT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.



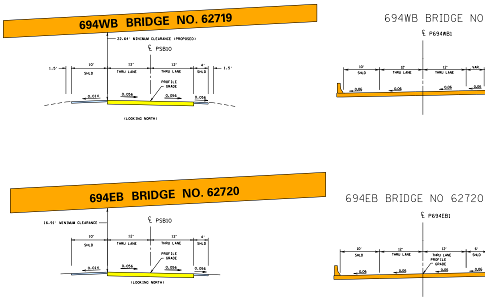
N
ARDEN HILLS 2000 POP. 9,652
NEW BRIGHTON 2000 POP. 22,206
NORTH OAKS 2000 POP. 3,883
SHOREVIEW 2000 POP. 25,924
LITTLE CANADA 2000 POP. 9,771
2000
SCALE IN FEET
Round Lake
Valentine Lake
Snail Lake
Island Lake
Lake Johanna
Lake Josephine
Lake Owasso
Pleasant Lake
Trailer Court

S.P. 6285–135 (T.H. 694)
Project Location



TH 10 SB
TH 10 NB
℄ PSB10
℄ PNB10
1.5'
10'
12'
4'
0'-12'
6'
SHLD
THRU LANE
BERM
PROFILE GRADE
0.04
0.02
0.020
1:6
1:4
B424 C&G
(LOOKING NORTH)

Arden Hills
RAMSEY COUNTY



694WB BRIDGE NO. 62719
22.64' MINIMUM CLEARANCE (PROPOSED)
694WB BRIDGE NO
℄ PSB10
℄ P694WB1
694EB BRIDGE NO. 62720
16.91' MINIMUM CLEARANCE
694EB BRIDGE NO 62720
℄ P694EB1
1.5'
10'
12'
4'
6'
VAR
SHLD
THRU LANE
PROFILE GRADE
0.014
0.056
0.06
(LOOKING NORTH)

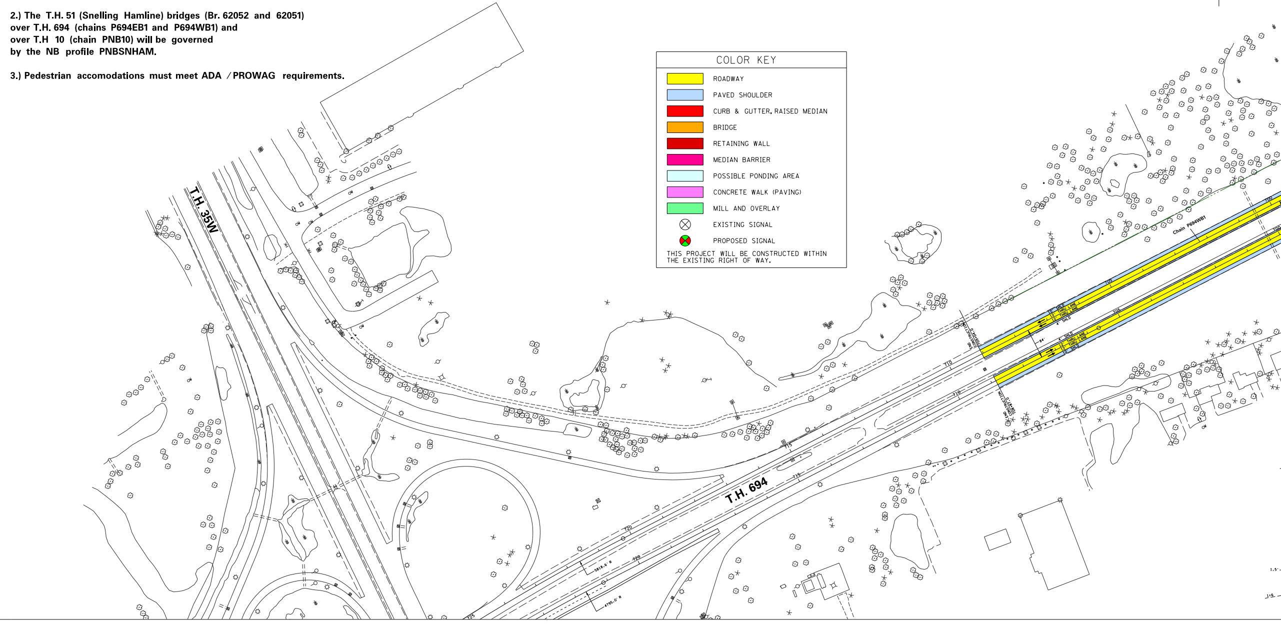
LAYOUT NOTES:
1.) This project is in the Rice Creek Watershed District.

2.) The T.H. 51 (Snelling Hamline) bridges (Br. 62052 and 62051) over T.H. 694 (chains P694EB1 and P694WB1) and over T.H 10 (chain PNB10) will be governed by the NB profile PNBSNHAM.

3.) Pedestrian accomodations must meet ADA / PROWAG requirements.

COLOR KEY	
🟨	ROADWAY
🟦	PAVED SHOULDER
🟥	CURB & GUTTER, RAISED MEDIAN
🟧	BRIDGE
🟥	RETAINING WALL
🟪	MEDIAN BARRIER
⬜	POSSIBLE PONDING AREA
🟪	CONCRETE WALK (PAVING)
🟩	MILL AND OVERLAY
⊗	EXISTING SIGNAL
⊗	PROPOSED SIGNAL

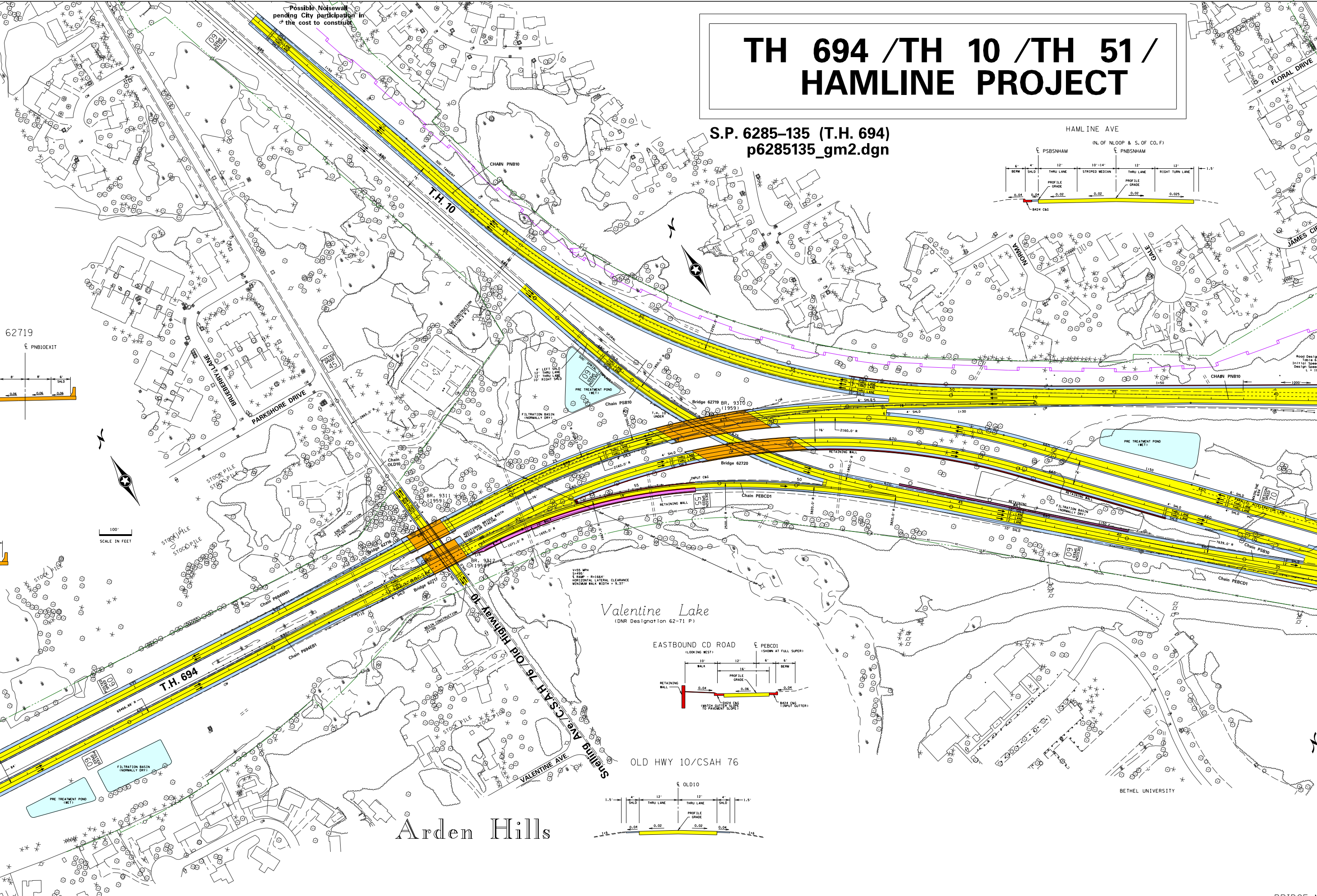
THIS PROJECT WILL BE CONSTRUCTED WITHIN THE EXISTING RIGHT OF WAY.



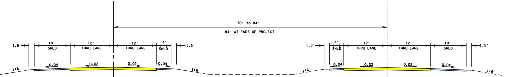
T.H. 35W
T.H. 694
Chain P694WB1

TH 694 /TH 10 /TH 51/ HAMLINE PROJECT

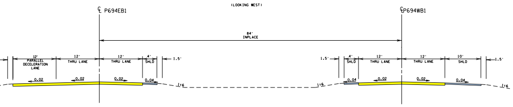
S.P. 6285–135 (T.H. 694)
p6285135_gm2.dgn


Possible Noisewall pending City participation in the cost to construct
T.H. 10
T.H. 694
CHAIN PNB10
Chain PSB10
Chain OLD10
Chain P694WB1
Chain P694EB1
Chain PEBCD1
Bridge 62719
BR. 9310 (1959)
Bridge 62720
BR. 9311 (1959)
BR. 9312 (1959)
Bridge 62716
Bridge 62717
RETAINING WALL
PRE TREATMENT POND (WET)
FILTRATION BASIN (NORMALLY DRY)
STOCK PILE
BRUEBERRY LANE
PARKSHORE DRIVE
NORMA
GALE
JAMES CIR
FLORAL DRIVE
VALENTINE AVE.
Snelling Ave./C.S.A.H. 76 /Old Highway 10
Valentine Lake
(DNR Designation 62-71 P)
Arden Hills
BETHEL UNIVERSITY
100'
SCALE IN FEET
62719
℄ PNB10EXIT
HAMLINE AVE
(N. OF NLOOP & S. OF CO. F)
℄ PSBSNHAM
℄ PNBSNHAM
BERM
SHLD
THRU LANE
STRIPED MEDIAN
THRU LANE
RIGHT TURN LANE
PROFILE GRADE
B424 C&G
EASTBOUND CD ROAD
(LOOKING WEST)
℄ PEBCD1
(SHOWN AT FULL SUPER)
RETAINING WALL
WALK
BERM
PROFILE GRADE
B424 C&G (MATCH GUTTER SLOPE TO PAVEMENT SLOPE)
B424 C&G (INPUT GUTTER)
OLD HWY 10/CSAH 76
℄ OLD10
SHLD
THRU LANE
THRU LANE
SHLD
PROFILE GRADE
V=55 MPH
S=49%
℄ RAMP - R=1664'
HORIZONTAL LATERAL CLEARANCE
MINIMUM WALK WIDTH = 9.37'

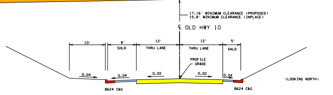
PROPOSED TYPICAL SECTION FOR T.H. 694


(LOOKING WEST)
℄ P694EB1
℄ P694WB1
76' to 84'
84' AT ENDS OF PROJECT
SHLD
THRU LANE
THRU LANE
SHLD
0.04
0.02
0.02
0.04
1:6

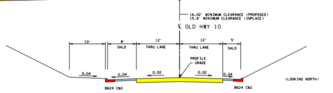
TYPICAL SECTION ON T.H. 694 NEAR ISLAND LAKE CHANNEL


(LOOKING WEST)
℄ P694EB1
℄ P694WB1
84'
INPLACE
PARALLEL DECELERATION LANE
THRU LANE
THRU LANE
SHLD
SHLD
THRU LANE
THRU LANE
SHLD
0.02
0.04
1:6

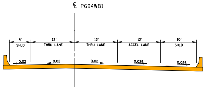
694WB BRIDGE NO. 62716


17.16' MINIMUM CLEARANCE (PROPOSED)
15.8' MINIMUM CLEARANCE (INPLACE)
℄ OLD HWY 10
SHLD
THRU LANE
THRU LANE
SHLD
PROFILE GRADE
B624 C&G
(LOOKING NORTH)

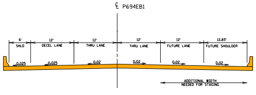
694EB BRIDGE NO. 62717


16.02' MINIMUM CLEARANCE (PROPOSED)
15.8' MINIMUM CLEARANCE (INPLACE)
℄ OLD HWY 10
SHLD
THRU LANE
THRU LANE
SHLD
PROFILE GRADE
B624 C&G
(LOOKING NORTH)

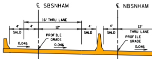
694WB BRIDGE NO 62716

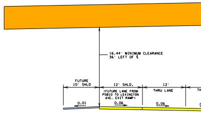

℄ P694WB1
SHLD
THRU LANE
THRU LANE
ACCEL LANE
SHLD
0.02
0.025

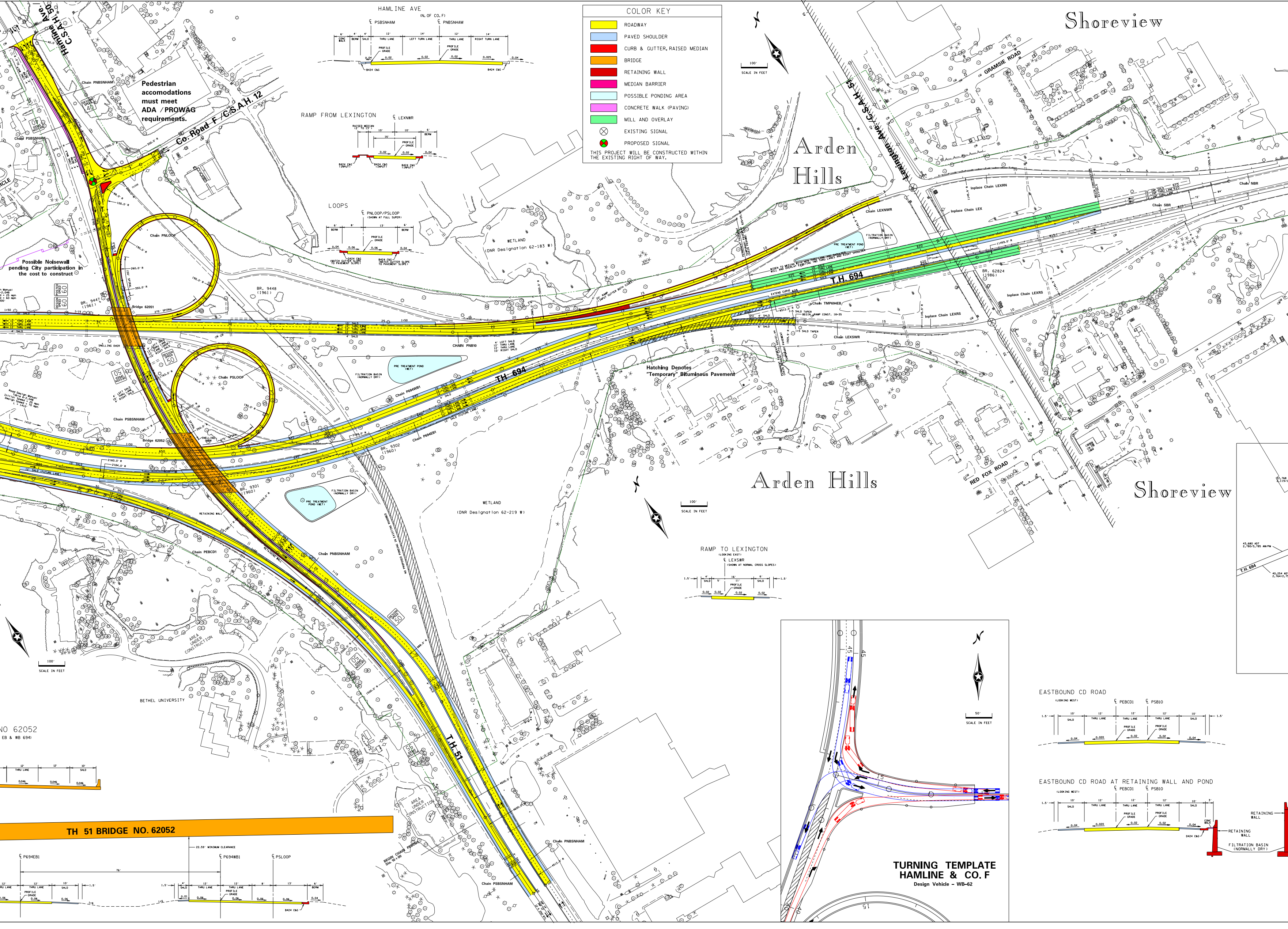
694EB BRIDGE NO 62717

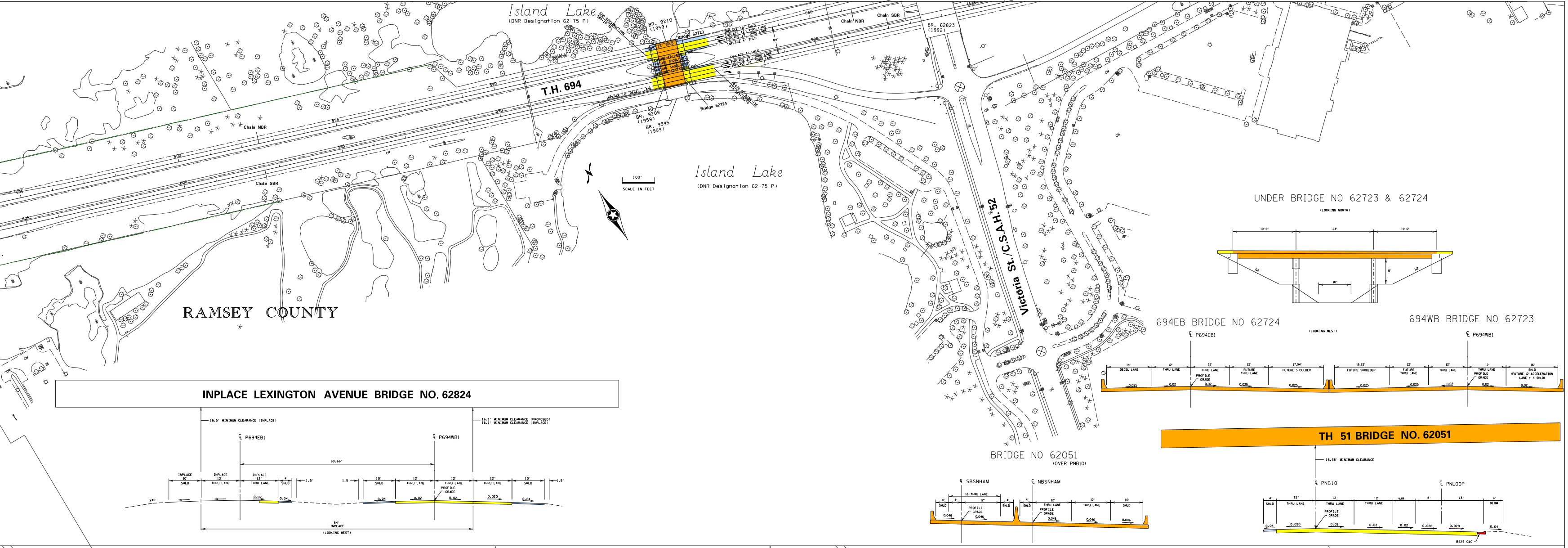

℄ P694EB1
SHLD
DECEL LANE
THRU LANE
THRU LANE
FUTURE LANE
FUTURE SHOULDER
ADDITIONAL WIDTH NEEDED FOR STAGING

BRIDGE N
(OVER


℄ SBSNHAM
℄ NBSNHAM
16' THRU LANE
SHLD
PROFILE GRADE
THRU LANE

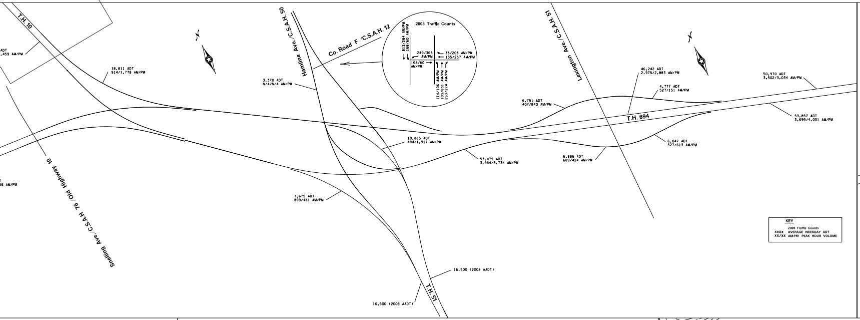

16.44' MINIMUM CLEARANCE 36' LEFT OF ℄
FUTURE 10' SHLD
12' SHLD. (FUTURE LANE FROM PSB10 TO LEXINGTON AVE. EXIT RAMP)
THRU LANE

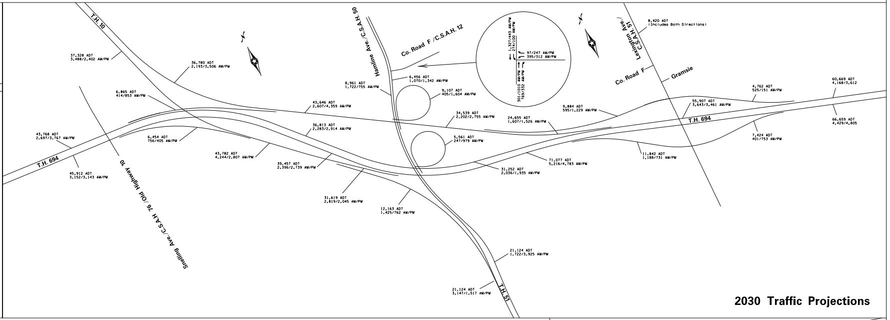

COLOR KEY
ROADWAY
PAVED SHOULDER
CURB & GUTTER, RAISED MEDIAN
BRIDGE
RETAINING WALL
MEDIAN BARRIER
POSSIBLE PONDING AREA
CONCRETE WALK (PAVING)
MILL AND OVERLAY
EXISTING SIGNAL
PROPOSED SIGNAL
THIS PROJECT WILL BE CONSTRUCTED WITHIN THE EXISTING RIGHT OF WAY.
HAMLINE AVE
(N. OF CO. F)
PSBSNHAM
PNBSNHAM
RAMP FROM LEXINGTON
LEXNWR
LOOPS
PNLOOP/PSLOOP
(SHOWN AT FULL SUPER)
Hamline Ave / C.S.A.H. 50
Co. Road F / C.S.A.H. 12
Pedestrian accomodations must meet ADA / PROWAG requirements.
Possible Noisewall pending City participation in the cost to construct
Shoreview
Arden Hills
Lexington Ave / C.S.A.H. 51
GRAMSIE ROAD
RED FOX ROAD
T.H. 694
TH 694
TH 51
Chain PNLOOP
Chain PSLOOP
Chain PSBSNHAM
Chain PNBSNHAM
Chain PEBCD1
Chain PNB10
Chain P694WB1
Chain P694EB1
Chain LEXNWR
Chain LEXSWR
Chain TMP694EB
Chain NBR
Chain SBR
Inplace Chain LEXRN
Inplace Chain LEX
Inplace Chain LEXRS
Inplace Chain LEXRS
Bridge 62051
Bridge 62052
BR. 9447 (1961)
BR. 9448 (1961)
BR. 9302 (1960)
BR. 9301 (1960)
BR. 62824 (1986)
WETLAND (DNR Designation 62-183 W)
WETLAND (DNR Designation 62-219 W)
PRE TREATMENT POND (WET)
FILTRATION BASIN (NORMALLY DRY)
Hatching Denotes "Temporary" Bituminous Pavement
RETAINING WALL
AREA UNDER CONSTRUCTION
BETHEL UNIVERSITY
100' SCALE IN FEET
RAMP TO LEXINGTON
(LOOKING EAST)
LEXSWR
(SHOWN AT NORMAL CROSS SLOPES)
TURNING TEMPLATE
HAMLINE & CO. F
Design Vehicle – WB-62
50' SCALE IN FEET
EASTBOUND CD ROAD
(LOOKING WEST)
PEBCD1
PSB10
EASTBOUND CD ROAD AT RETAINING WALL AND POND
RETAINING WALL
FILTRATION BASIN (NORMALLY DRY)
NO 62052
EB & WB 694
TH 51 BRIDGE NO. 62052
22.59' MINIMUM CLEARANCE
P694EB1
P694WB1
PSLOOP
SHLD
THRU LANE
BERM
PROFILE GRADE
B424 C&G
TH 694


Island Lake
(DNR Designation 62-75 P)
T.H. 694
Chain NBR
Chain SBR
END CONSTRUCTION 585+19.70
BR. 9210 (1959)
Bridge 62723
16' SHLD
FUTURE 12' THRU LANE
FUTURE SHOULDER
FUTURE SHOULDER
FUTURE 12' THRU LANE
INPLACE 10' SHLD
INPLACE 12' THRU LANE
INPLACE 12' THRU LANE
INPLACE 4' SHLD
84'
INPLACE 4' SHLD
INPLACE 12' THRU LANE
INPLACE 12' THRU LANE
INPLACE 12' DECEL LANE
BEGIN SP 6285-135 STA 583+23.70
Bridge 62724
BR. 9209 (1959)
BR. 9345 (1959)
BR. 62823 (1992)
580
590
595
600
605
100'
SCALE IN FEET
Island Lake
(DNR Designation 62-75 P)
Victoria St./C.S.A.H. 52
RAMSEY COUNTY
UNDER BRIDGE NO 62723 & 62724
(LOOKING NORTH)
19' 6"
24'
19' 6"
1:2
8'
10'
1:2
694EB BRIDGE NO 62724
(LOOKING WEST)
694WB BRIDGE NO 62723
℄ P694EB1
℄ P694WB1
14' DECEL LANE
12' THRU LANE
12' THRU LANE
PROFILE GRADE
12' FUTURE THRU LANE
17.04' FUTURE SHOULDER
16.82' FUTURE SHOULDER
12' FUTURE THRU LANE
12' THRU LANE
12' THRU LANE
PROFILE GRADE
16' SHLD (FUTURE 12' ACCELERATION LANE + 4' SHLD)
0.025
0.02
0.02
0.025
0.025
0.025
0.025
0.02
0.02
0.02
16.5' MINIMUM CLEARANCE (INPLACE)
16.1' MINIMUM CLEARANCE (PROPOSED)
16.1' MINIMUM CLEARANCE (INPLACE)
℄ P694EB1
℄ P694WB1
60.66'
INPLACE 10' SHLD
INPLACE 12' THRU LANE
INPLACE 12' THRU LANE
4' SHLD
1.5'
1.5'
10' SHLD
12' THRU LANE
12' THRU LANE
PROFILE GRADE
12' THRU LANE
10' SHLD
1.5'
VAR
0.02
0.04
0.04
0.02
0.02
0.020
0.04
84' INPLACE
(LOOKING WEST)
BRIDGE NO 62051
(OVER PNB10)
℄ SBSNHAM
℄ NBSNHAM
16' THRU LANE
4' SHLD
4'
12'
4' SHLD
PROFILE GRADE
4' SHLD
12' THRU LANE
PROFILE GRADE
12' THRU LANE
10' SHLD
0.046
0.046
0.046
0.046
0.046
16.38' MINIMUM CLEARANCE
℄ PNB10
℄ PNLOOP
4' SHLD
12' THRU LANE
12' THRU LANE
PROFILE GRADE
12' THRU LANE
VAR
8'
13'
6' BERM
0.04
0.020
0.02
0.02
0.02
0.020
0.020
0.04
B424 C&G

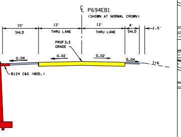
INPLACE LEXINGTON AVENUE BRIDGE NO. 62824

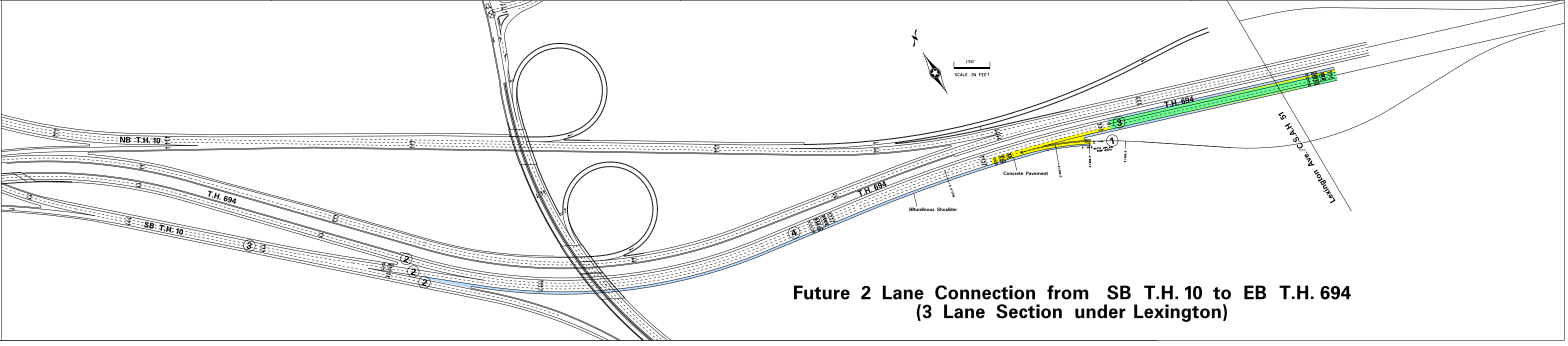
TH 51 BRIDGE NO. 62051


T.H. 10
18,811 ADT
914/1,778 AM/PM
Snelling Ave./C.S.A.H 76/Old Highway 10
Hamline Ave./C.S.A.H. 50
Co. Road F /C.S.A.H. 12
3,370 ADT
N/A/N/A AM/PM
2003 Traffic Counts
813/264 AM/PM
168/60 AM/PM
249/363 AM/PM
33/203 AM/PM
135/257 AM/PM
168/60 AM/PM
114/106 AM/PM
103/831 AM/PM
263/274 AM/PM
10,885 ADT
484/1,917 AM/PM
7,675 ADT
899/481 AM/PM
53,479 ADT
3,984/3,734 AM/PM
6,886 ADT
689/424 AM/PM
6,751 ADT
407/840 AM/PM
Lexington Ave./C.S.A.H. 51
46,242 ADT
2,975/2,883 AM/PM
4,777 ADT
527/151 AM/PM
T.H. 694
6,047 ADT
327/613 AM/PM
50,970 ADT
3,502/3,034 AM/PM
53,857 ADT
3,699/4,031 AM/PM
16,500 (2008 AADT)
16,500 (2008 AADT)
T.H. 51
KEY
2009 Traffic Counts
XXXX AVERAGE WEEKDAY ADT
XX/XX AM/PM PEAK HOUR VOLUME


T.H. 10
37,328 ADT
3,488/2,402 AM/PM
36,780 ADT
2,193/3,506 AM/PM
6,865 ADT
414/853 AM/PM
43,768 ADT
2,697/3,767 AM/PM
T.H. 694
45,912 ADT
3,152/3,143 AM/PM
Snelling Ave./C.S.A.H 76/Old Highway 10
6,454 ADT
756/405 AM/PM
43,782 ADT
4,244/2,807 AM/PM
43,646 ADT
2,607/4,359 AM/PM
36,813 ADT
2,283/2,914 AM/PM
39,457 ADT
2,396/2,739 AM/PM
31,619 ADT
2,819/2,045 AM/PM
12,163 ADT
1,425/762 AM/PM
Hamline Ave./C.S.A.H. 50
Co. Road F /C.S.A.H. 12
8,961 ADT
1,722/755 AM/PM
6,456 ADT
1,070/1,342 AM/PM
9,107 ADT
405/1,604 AM/PM
34,539 ADT
2,202/2,755 AM/PM
5,561 ADT
247/979 AM/PM
1,327/443 AM/PM
274/100 AM/PM
97/247 AM/PM
395/312 AM/PM
301/1010 AM/PM
769/332 AM/PM
31,252 ADT
2,036/1,935 AM/PM
71,077 ADT
5,216/4,783 AM/PM
24,655 ADT
1,607/1,526 AM/PM
9,884 ADT
595/1,229 AM/PM
Lexington Ave./C.S.A.H. 51
8,420 ADT
(Includes Both Directions)
Co. Road F
Gramsie
11,842 ADT
1,188/731 AM/PM
55,907 ADT
3,643/3,461 AM/PM
4,762 ADT
525/151 AM/PM
60,669 ADT
4,168/3,612
66,659 ADT
4,429/4,805
7,424 ADT
401/753 AM/PM
21,124 ADT
1,722/3,925 AM/PM
21,124 ADT
3,147/1,517 AM/PM
T.H. 51

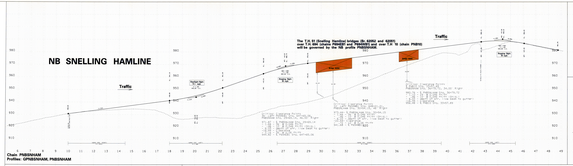
2030 Traffic Projections


℄ P694EB1
(SHOWN AT NORMAL CROWN)
10' SHLD
12' THRU LANE
12' THRU LANE
4' SHLD
1.5'
PROFILE GRADE
0.04
0.02
0.02
0.04
1:6
B124 C&G (MOD.)

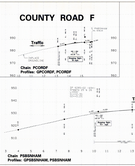

150'
SCALE IN FEET
NB T.H. 10
T.H. 694
SB T.H. 10
T.H. 694
T.H. 694
③
②
②
②
④
③
①
Concrete Pavement
Bituminous Shoulder
6' SHLD
MATCH INPLACE RAMP WIDTH
Lexington Ave./C.S.A.H. 51

Future 2 Lane Connection from SB T.H. 10 to EB T.H. 694
(3 Lane Section under Lexington)

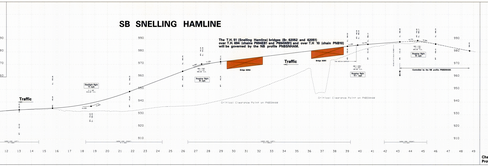
## NB SNELLING HAMLINE



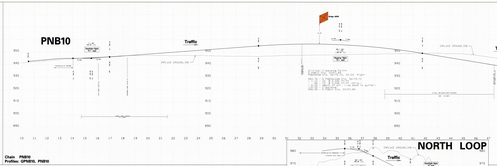

## COUNTY ROAD F




## SB SNELLING HAMLINE



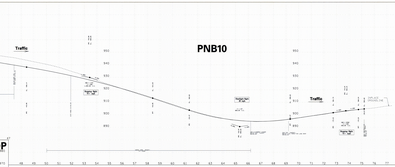

## PNB10



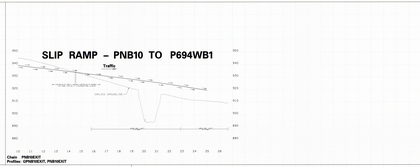

## NORTH LOOP



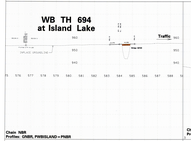

## PNB10



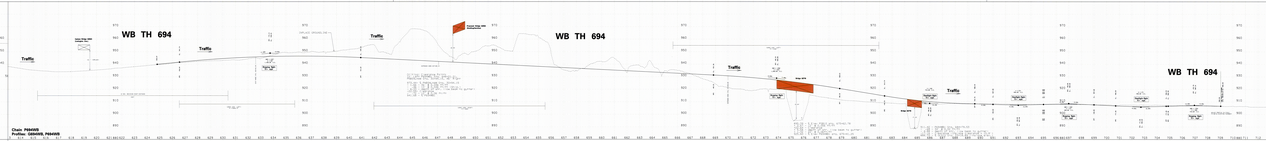

## SLIP RAMP – PNB10 TO P694WB1




## WB TH 694 at Island Lake



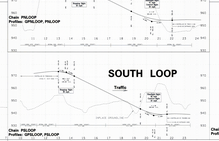

## WB TH 694




## WB TH 694



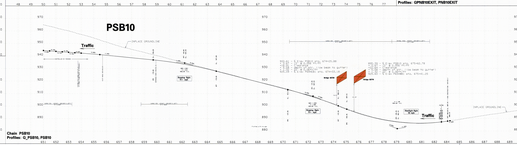

## WB TH 694



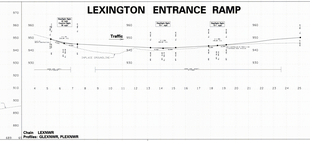

## SOUTH LOOP



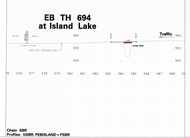

## PSB10




## LEXINGTON ENTRANCE RAMP




## EB TH 694 at Island Lake




## EB TH 694

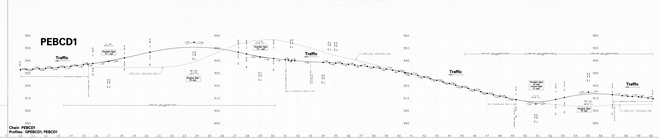
## EB TH 694



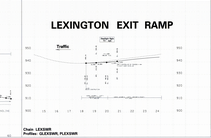

## EB TH 694

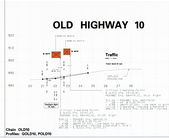



## PEBCD1




## LEXINGTON EXIT RAMP




## OLD HIGHWAY 10