

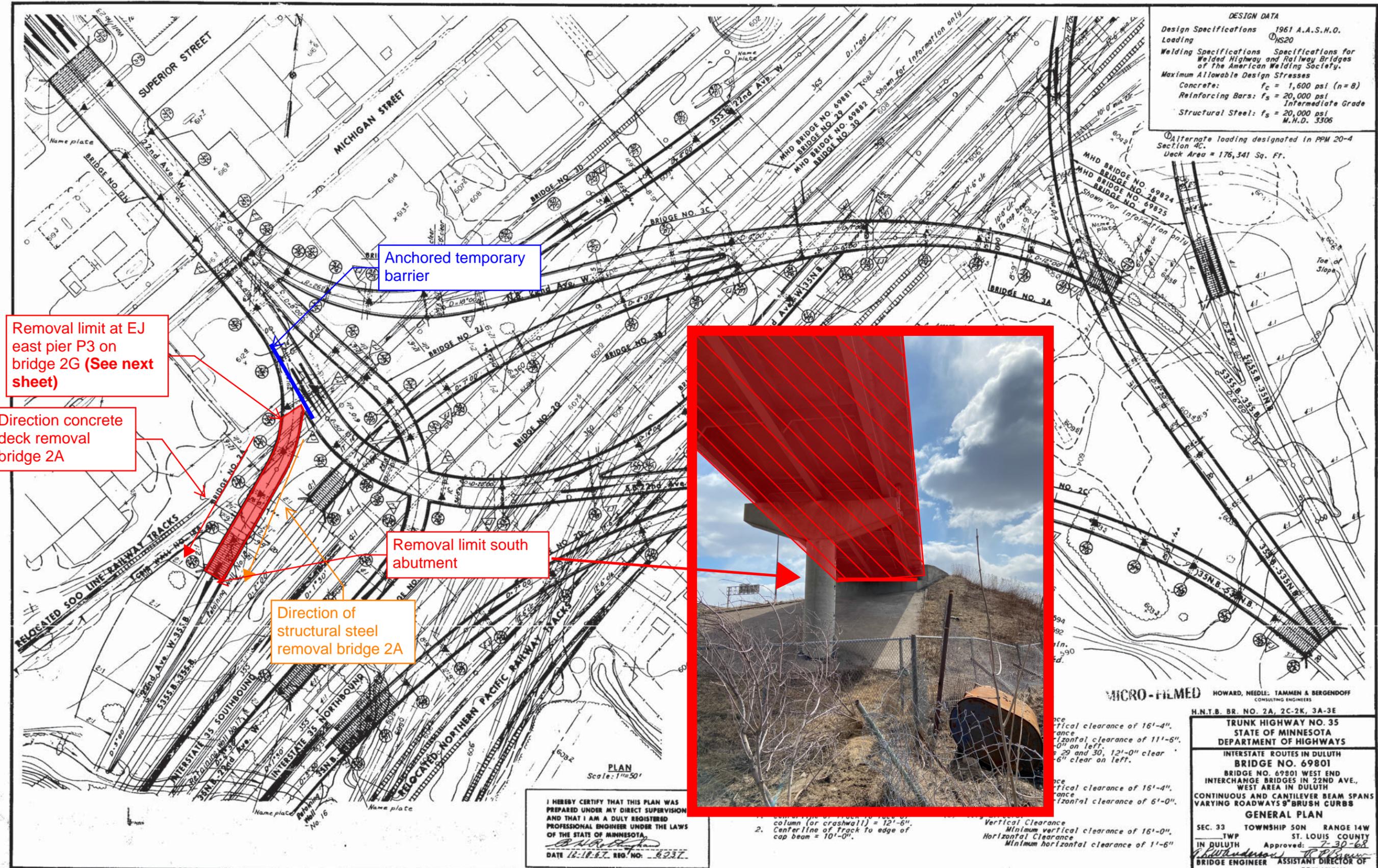
STAGE 0 REMOVALS WP 1

TPI Main

 Removals Current Stage
 Removals Previous Stages

DESIGN DATA
Design Specifications 1961 A.A.S.H.O.
Loading HS20
Welding Specifications Specifications for
Welded Highway and Railway Bridges
of the American Welding Society.
Maximum Allowable Design Stresses
Concrete: $f_c = 1,600$ psi ($n=8$)
Reinforcing Bars: $f_s = 20,000$ psi
Intermediate Grade
Structural Steel: $f_s = 20,000$ psi
M.H.D. 3306

Alternate loading designated in PPM 20-4
Section 4C.
Deck Area = 176,341 Sq. Ft.



Removal limit at EJ
east pier P3 on
bridge 2G (See next
sheet)

Direction concrete
deck removal
bridge 2A

Anchored temporary
barrier

Removal limit south
abutment

Direction of
structural steel
removal bridge 2A

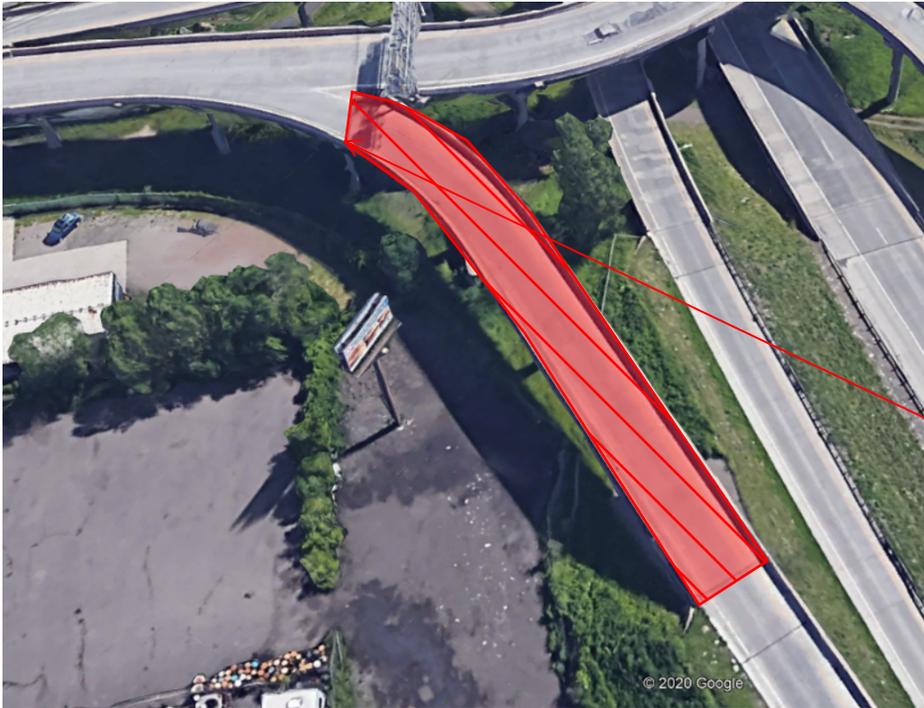


PLAN
Scale: 1"=50'
I HEREBY CERTIFY THAT THIS PLAN WAS
PREPARED UNDER MY DIRECT SUPERVISION
AND THAT I AM A DULY REGISTERED
PROFESSIONAL ENGINEER UNDER THE LAWS
OF THE STATE OF MINNESOTA.
DATE 12-18-67. REG. NO. 6237

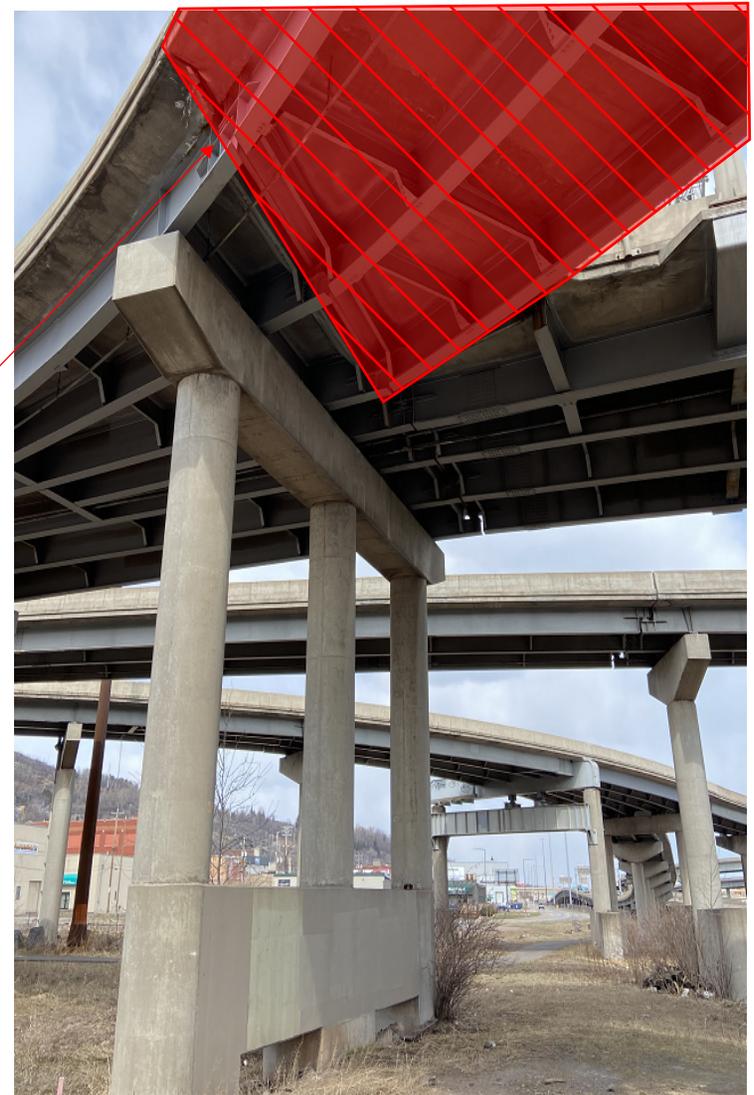
MICRO-FILMED HOWARD, NEEDLE, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
H.N.T.B. BR. NO. 2A, 2C-2K, 3A-3E
TRUNK HIGHWAY NO. 35
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
INTERSTATE ROUTES IN DULUTH
BRIDGE NO. 69801
BRIDGE NO. 69801 WEST END
INTERCHANGE BRIDGES IN 22ND AVE.,
WEST AREA IN DULUTH
CONTINUOUS AND CANTILEVER BEAM SPANS
VARYING ROADWAYS 9' BRUSH CURBS
GENERAL PLAN
SEC. 33 TOWNSHIP 50N RANGE 14W
ST. LOUIS COUNTY
IN DULUTH Approved: 7-30-68
BRIDGE ENGINEER ASSISTANT DIRECTOR OF
OPERATIONS

Stage 0 Bridge 2A Removal Limits

Above



Below (Looking North)

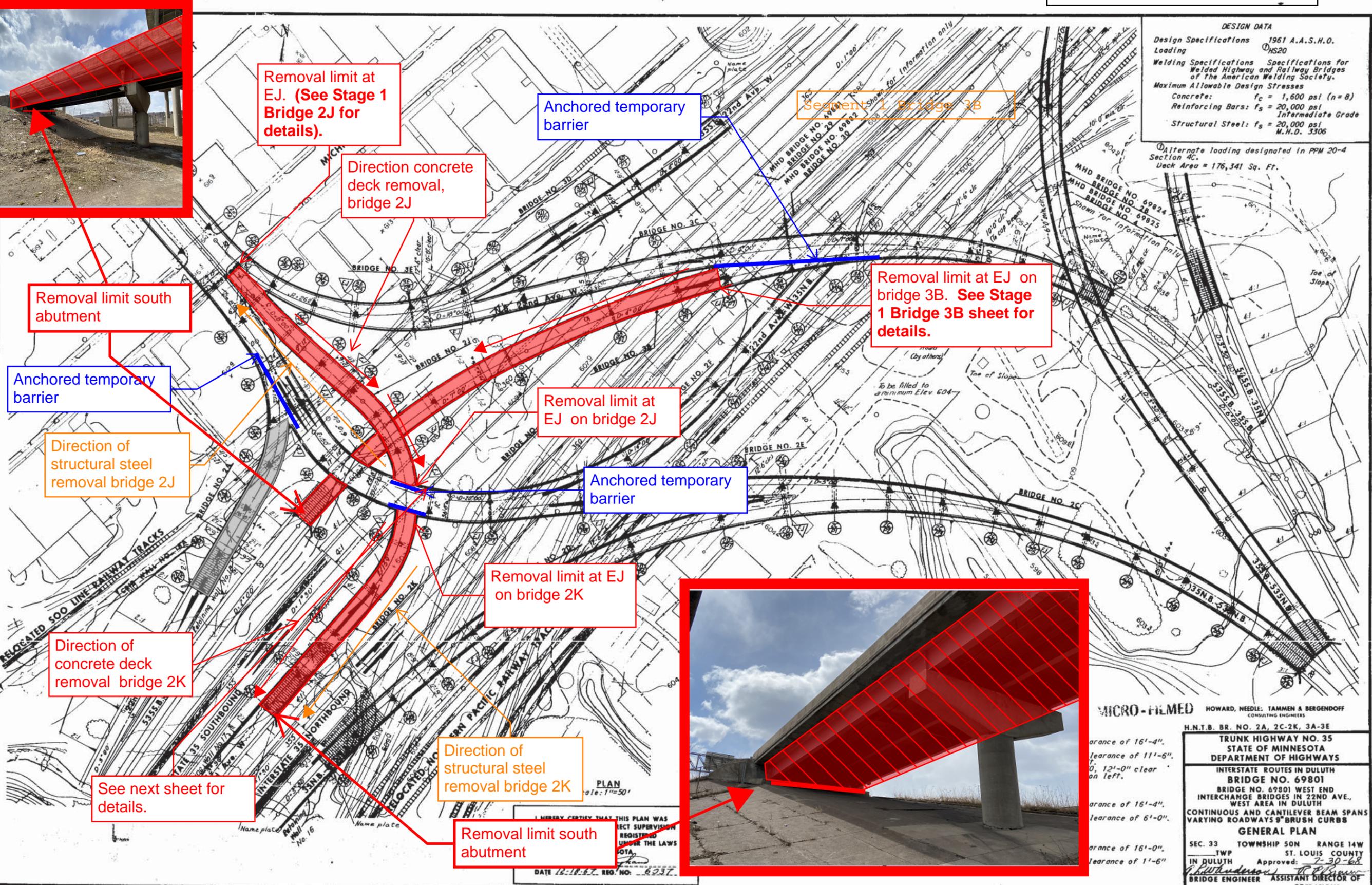


EJ

STAGE 1 REMOVALS WP 1

TPI Main

Removals Current Stage
 Removals Previous Stages



DESIGN DATA

Design Specifications 1961 A.A.S.H.O.
 Loading HS20
 Welding Specifications Specifications for
 Welded Highway and Railway Bridges
 of the American Welding Society.
 Maximum Allowable Design Stresses
 Concrete: $f_c = 1,600$ psi ($n=8$)
 Reinforcing Bars: $f_s = 20,000$ psi
 Intermediate Grade
 Structural Steel: $f_s = 20,000$ psi
 M.H.D. 3306

Alternate loading designated in PPM 20-4
 Section 4C.
 Deck Area = 176,341 Sq. Ft.



MICRO-FILMED HOWARD, NEEDLE, TAMMEN & BERGENDOFF CONSULTING ENGINEERS

H.N.T.B. BR. NO. 2A, 2C-2K, 3A-3E

TRUNK HIGHWAY NO. 35

STATE OF MINNESOTA

DEPARTMENT OF HIGHWAYS

INTERSTATE ROUTES IN DULUTH

BRIDGE NO. 69801

BRIDGE NO. 69801 WEST END INTERCHANGE BRIDGES IN 22ND AVE., WEST AREA IN DULUTH

CONTINUOUS AND CANTILEVER BEAM SPANS VARYING ROADWAYS 9' BRUSH CURBS

GENERAL PLAN

SEC. 33 TOWNSHIP 50N RANGE 14W

ST. LOUIS COUNTY

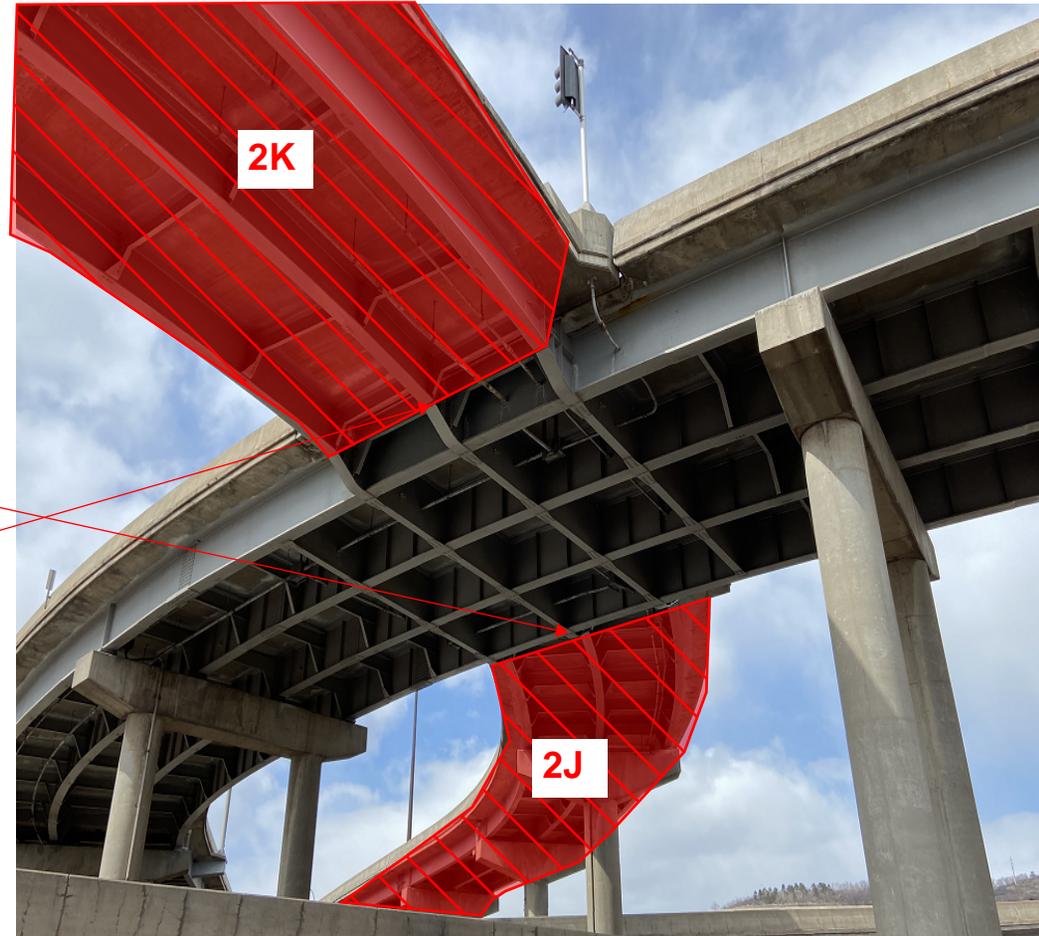
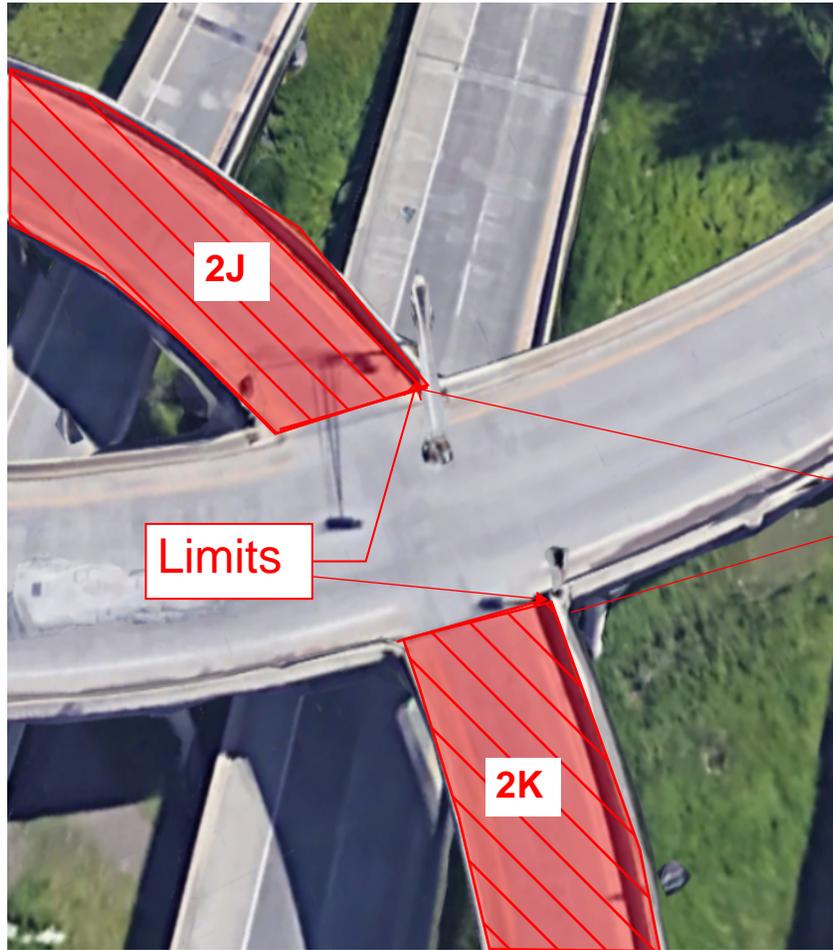
IN DULUTH Approved: 7-30-68

BRIDGE ENGINEER ASSISTANT DIRECTOR OF OPERATIONS

Stage 1 "Intersection in the Sky" Removal Limits

Above

Below (Looking North)

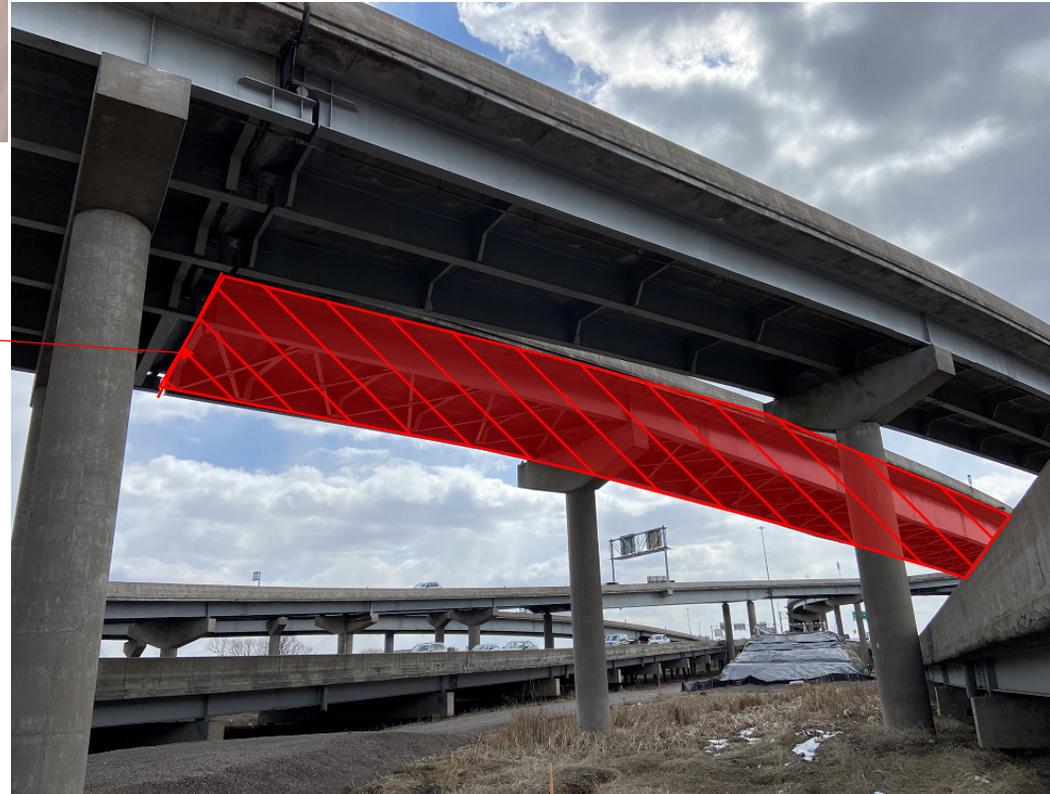


Stage 1 Bridge 3B Removal Limits

Above



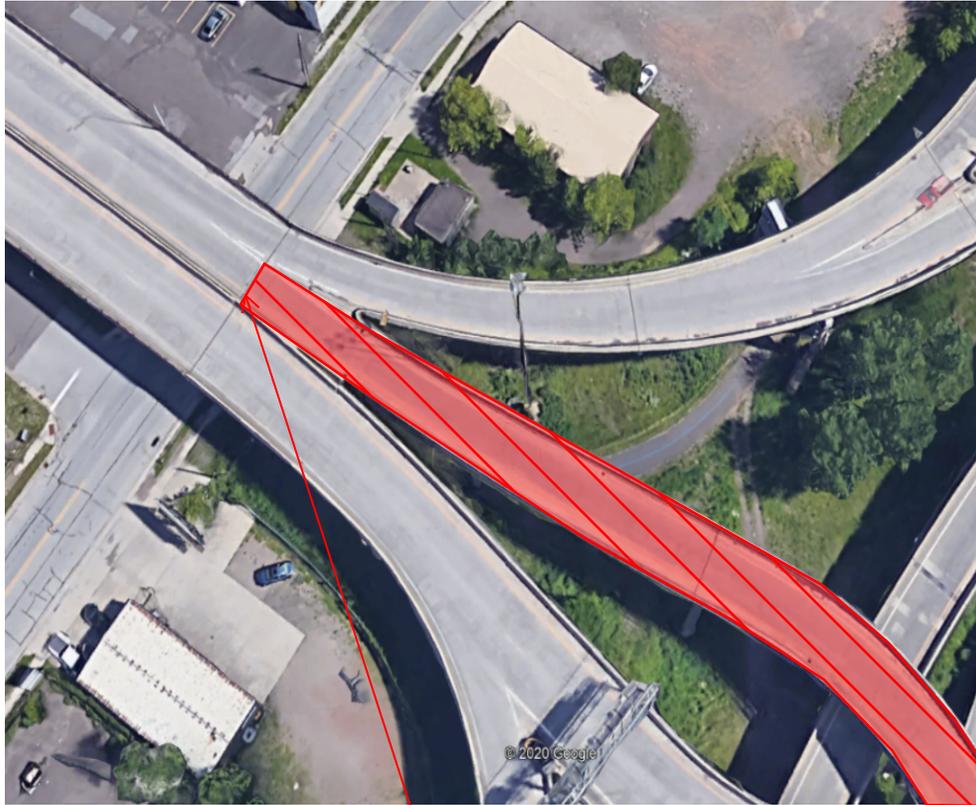
Below (Looking SE)



Limits

Stage 1 Bridge 2J Removal Limits

Above



Limits

Below (Looking West)



STAGE 2 Phase 2 REMOVALS WP 1

TPI Main

Removals Current Stage
 Removals Previous Stages

DESIGN DATA

Design Specifications 1961 A.A.S.H.O.
Loading HS20

Welding Specifications Specifications for Welded Highway and Railway Bridges of the American Welding Society.

Maximum Allowable Design Stresses

Concrete: $f_c = 1,600$ psi ($n=8$)
Reinforcing Bars: $f_s = 20,000$ psi Intermediate Grade
Structural Steel: $f_s = 20,000$ psi M.H.D. 3306

Alternate loading designated in PPM 20-4 Section 4C.
Deck Area = 176,341 Sq. Ft.

Removal limit at pier 16N on bridge 69882

Direction concrete deck removal, bridge 69882. Pier 16N to South abutment.



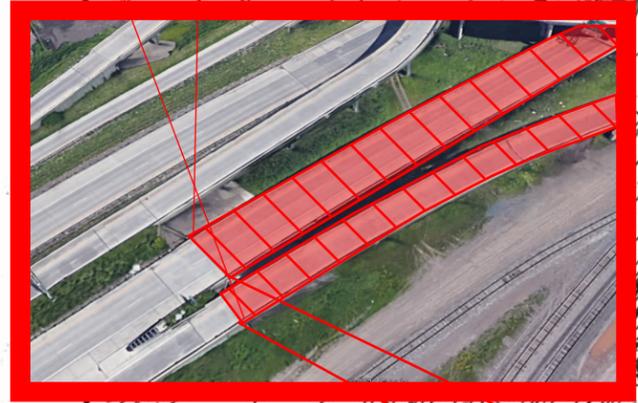
Direction of structural steel removal bridge 69882. 1st segment will be from pier 11 to the EJ south of pier 12. 2nd segment will be EJ south of pier 12 to pier 16. 3rd segment will be from pier 11 to the south abutment.



Anchored temporary barrier

Steel removal limit at pier 7 on bridge 2C

Concrete removal limit at pier 1 on bridge 2C. See next sheet for details.



Direction of structural steel removal bridge 2D. 1st segment will be from the abutment to the EJ south of pier 4. 2nd segment will be from pier 7 to the EJ south of pier 4.

Direction concrete deck removal, bridge 2D. Pier on bridge 2C to the Abutment 2D.



- LEGEND**
- Pier 4, Bridge No. 2C
 - South Abutment, Bridge No. 2C
 - Expansion Joint
 - Crashwalls
 - Rail Tracks
 - Clearances

1. Centerline of track column (or crashwall)
2. Centerline of track cap beam = 10'-0"

OF THE STATE OF MINNESOTA
DATE 12-18-67, REG. NO. 6237

RD, NEEDLE: TAMMEN & BERGENDOFF CONSULTING ENGINEERS

R. NO. 2A, 2C-2K, 3A-3E
BRUNK HIGHWAY NO. 35
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
INTERSTATE ROUTES IN DULUTH
BRIDGE NO. 69801
BRIDGE NO. 69801 WEST END
HANGAR BRIDGES IN 22ND AVE.,
WEST AREA IN DULUTH
BOUS AND CANTILEVER BEAM SPANS
ROADWAYS 9" BRUSH CURBS

GENERAL PLAN

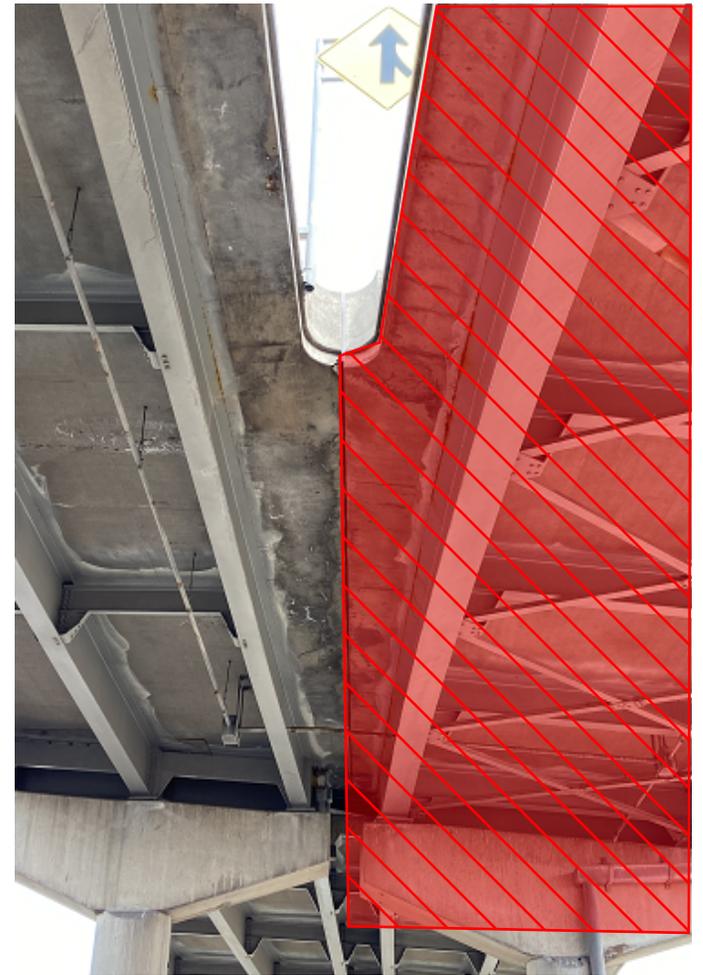
TOWNSHIP 50N RANGE 14W
ST. LOUIS COUNTY
Approved: 7-30-68
ENGINEER ASSISTANT DIRECTOR OF OPERATIONS

Stage 2 Bridge 2D Removal Limits

Looking North



Below



STAGE 2 REMOVALS WP 1

TPI Main

Removals Current Stage
 Removals Previous Stages

Direction of structural steel removal bridge 69824. 1st segment will be from south abutment to pier 6. 2nd segment will be from pier 30S on bridge 69881N to pier 6 of bridge 69824.

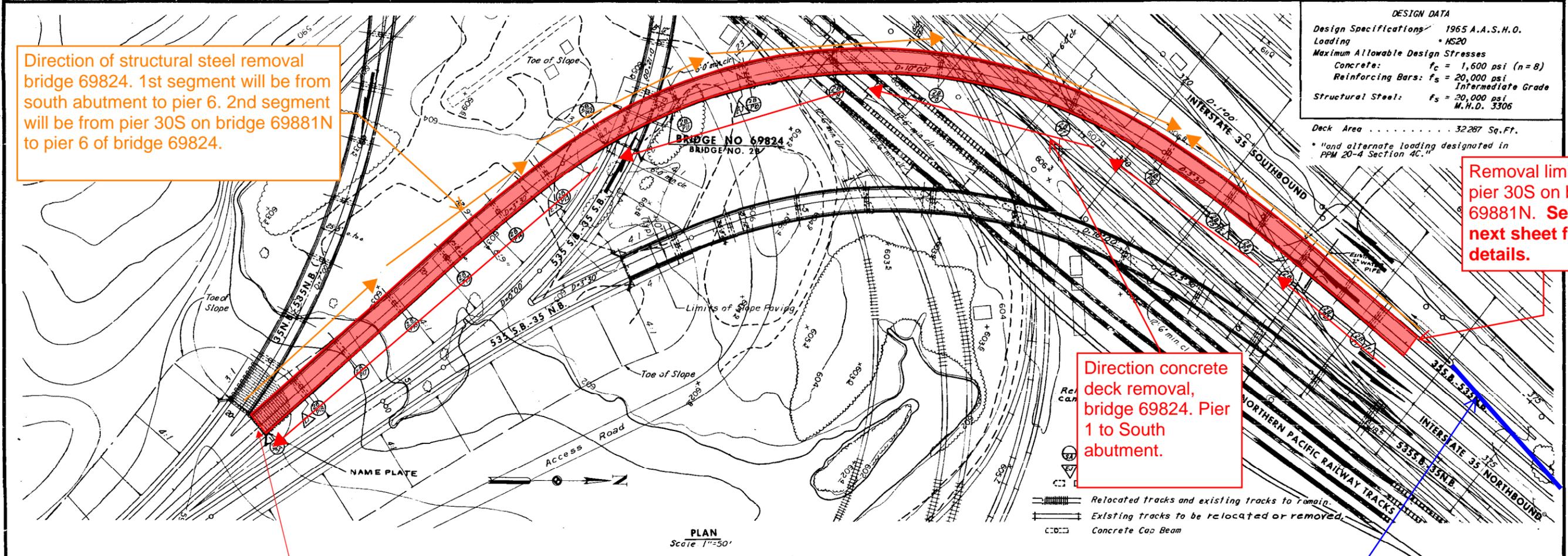
DESIGN DATA

Design Specifications: 1965 A.A.S.H.O.
 Loading: HS20
 Maximum Allowable Design Stresses
 Concrete: $f_c = 1,600$ psi ($n=8$)
 Reinforcing Bars: $f_s = 20,000$ psi Intermediate Grade
 Structural Steel: $f_s = 20,000$ psi M.H.D. 3306

Deck Area: 32287 Sq.Ft.
 *and alternate loading designated in PPM 20-4 Section 4C."

Removal limit at pier 30S on bridge 69881N. See next sheet for details.

Direction concrete deck removal, bridge 69824. Pier 1 to South abutment.



Anchored temporary barrier

ROAD CLEARANCE includes all tracks

Vertical Clearance
 Minimum vertical clearance of 23'-0" from top of bridge within 8' of bridge
 Horizontal Clearance
 Minimum horizontal clearance:

- Centerline of track to face of column (or crashwall) = 12'-6"
- Centerline of track to edge of cap beam = 10'-0"

(2) Ramps:
 Vertical Clearance
 Minimum vertical clearance of 16'-4"
 Horizontal Clearance
 Minimum horizontal clearance of 6'-0"

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

[Signature]
 DATE 12-18-67 REG. NO. 6621

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS

H.N.T.B. BR. NO. 28

TRUNK HIGHWAY NO. 35
 STATE OF MINNESOTA
 DEPARTMENT OF HIGHWAYS

INTERSTATE ROUTES IN DULUTH
 BRIDGE NO. 69824
 35 S.B. -535 N.B. IN 22ND AVE.
 WEST INTERCHANGE

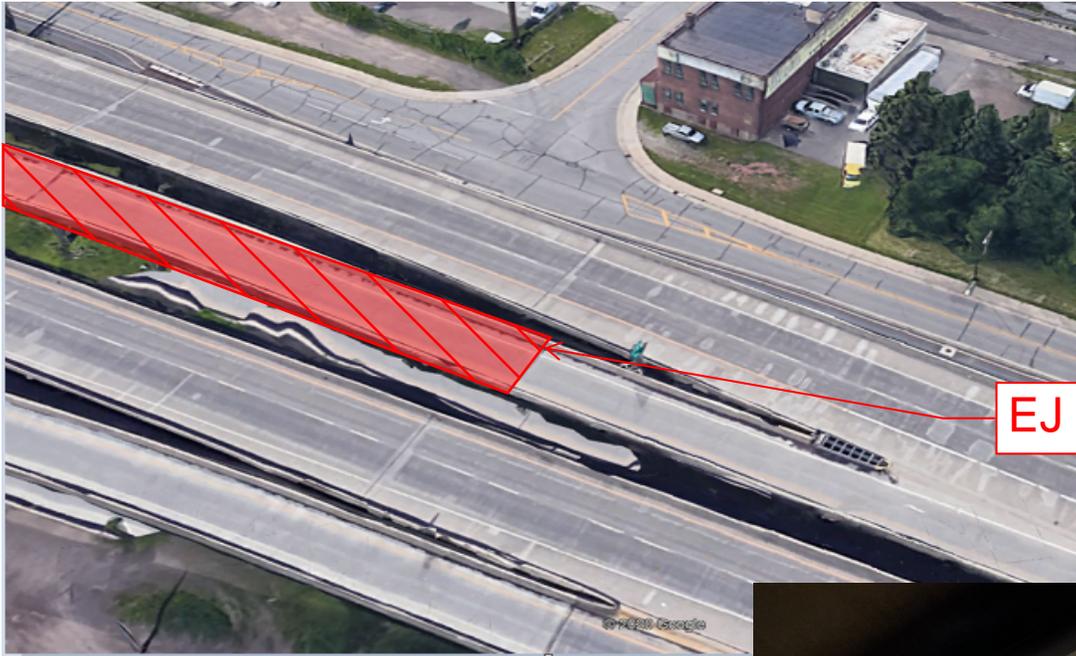
CONTINUOUS AND CANTILEVER BEAM SPANS
 21'-6" ROADWAY 2'-9" CURBS
 GENERAL PLAN

SEC. 33 TOWNSHIP 50N RANGE 14W
 TWP ST. LOUIS COUNTY
 IN DULUTH Approved: *[Signature]*

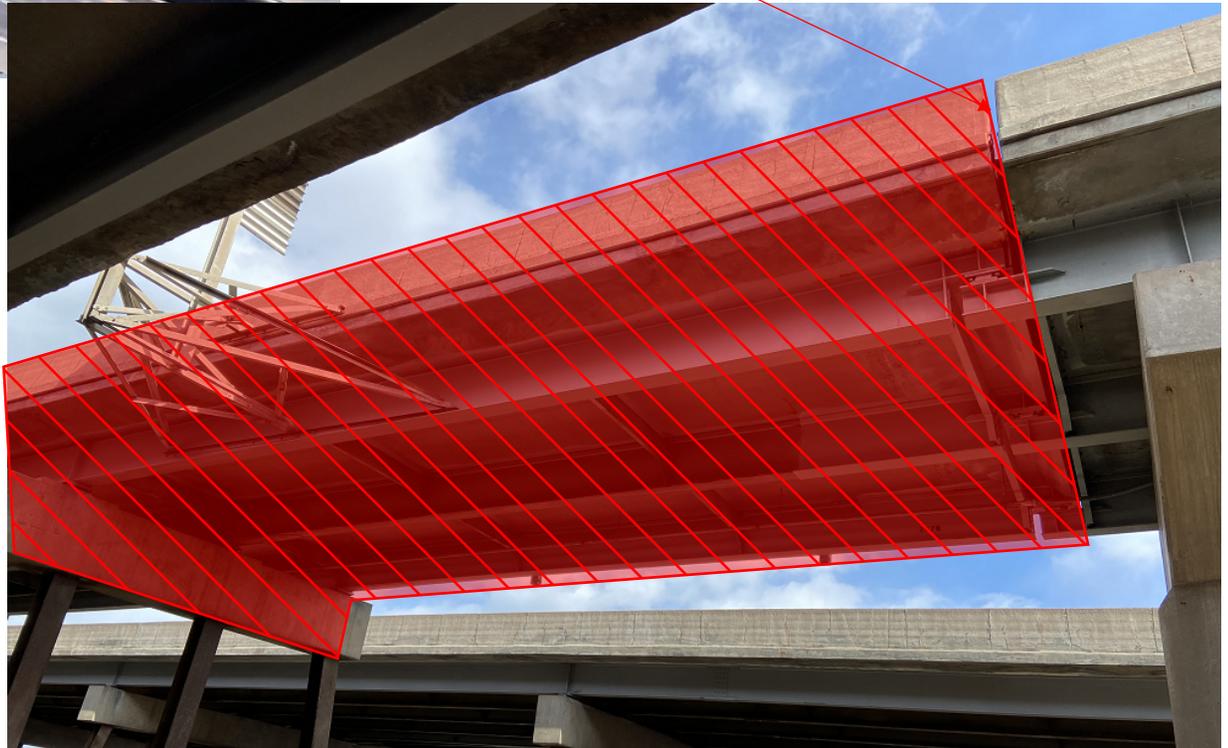
ASSISTANT DIRECTOR OF OPERATIONS
 BRIDGE ENGINEER
[Signature] 7-30-68

Stage 2 Bridge 69881N Removal Limits

Above



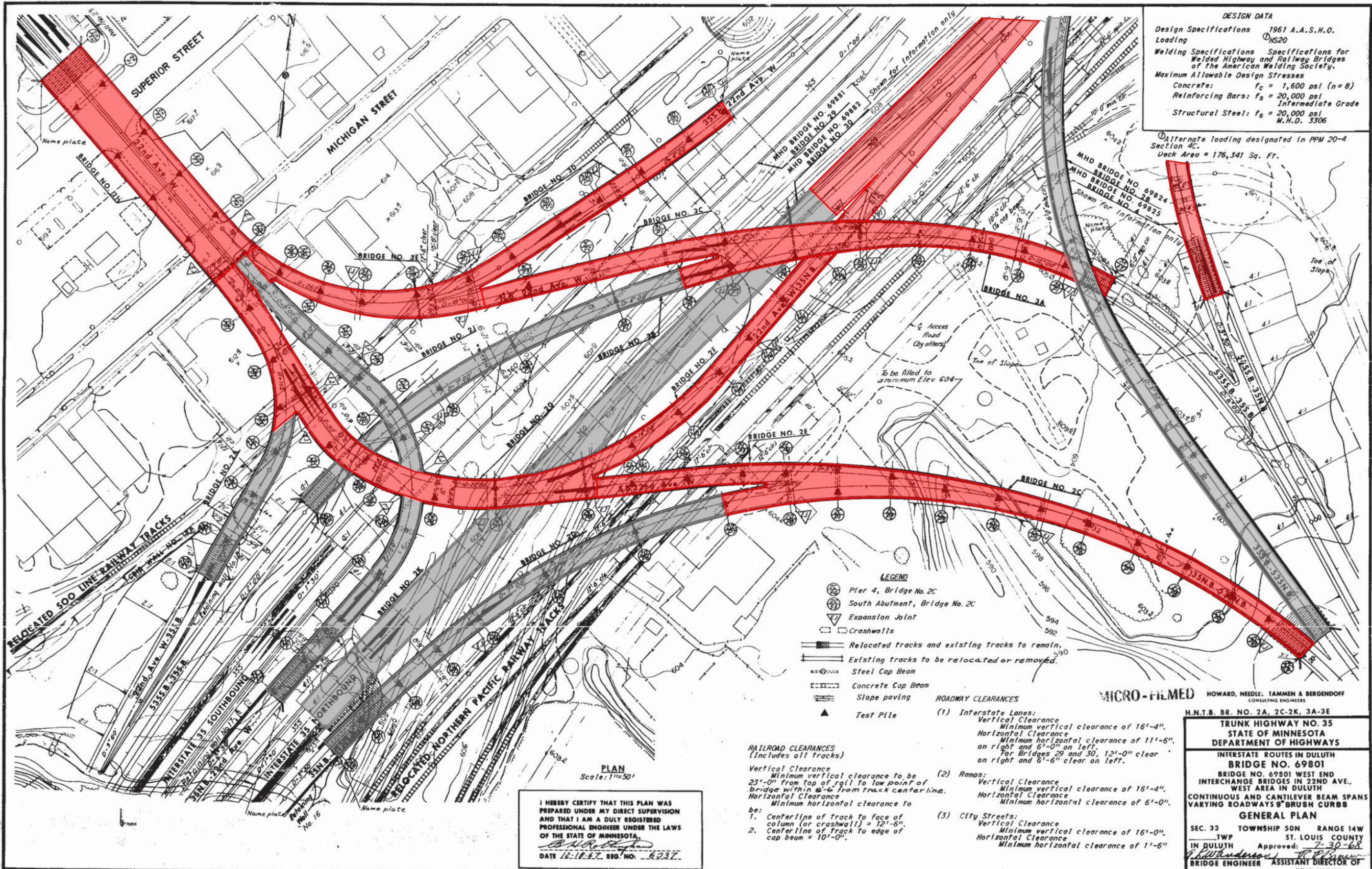
Below (Looking North)



STAGE 3 REMOVALS WP 1

TPI Main

Removals Current Stage
 Removals Previous Stages



DESIGN DATA

Design Specifications 1961 A.A.S.H.O.
 Loading HS20

Welding Specifications Specifications for
 Welded Highway and Railway Bridges
 of the American Welding Society.

Maximum Allowable Design Stresses

Concrete: $f_c = 1,600$ psi ($n=8$)
 Reinforcing Bars: $f_s = 20,000$ psi
 Intermediate Grade
 Structural Steel: $f_s = 20,000$ psi
 M.H.D. 3306

Alternate loading designated in PPM 20-4
 Section 4C.
 Deck Area = 176,341 Sq. Ft.

- LEGEND**
- Pier 4, Bridge No. 2C
 - South Abutment, Bridge No. 2C
 - Expansion Joint
 - Crashwalls
 - Relocated tracks and existing tracks to remain.
 - Existing tracks to be relocated or removed.
 - Steel Cap Beam
 - Concrete Cap Beam
 - Slope paving
 - Test Pile

RAILROAD CLEARANCES
 (Includes all tracks)

- Vertical Clearance
 Minimum vertical clearance to be
 23'-0" from top of rail to low point of
 bridge within 45' from track centerline.
- Horizontal Clearance
 Minimum horizontal clearance to
 be:
1. Centerline of track to face of
 column (or crashwall) = 12'-6"
 2. Centerline of track to edge of
 cap beam = 10'-0"

- ROADWAY CLEARANCES**
- (1) Interstate Lanes:
 Vertical Clearance
 Minimum vertical clearance of 16'-4"
 Horizontal Clearance
 Minimum horizontal clearance of 11'-6"
 on right and 6'-0" on left.
 For Bridges 29 and 30, 12'-0" clear
 on right and 6'-6" clear on left.
 - (2) Ramps:
 Vertical Clearance
 Minimum vertical clearance of 16'-4"
 Horizontal Clearance
 Minimum horizontal clearance of 6'-0"
 - (3) City Streets:
 Vertical Clearance
 Minimum vertical clearance of 16'-0"
 Horizontal Clearance
 Minimum horizontal clearance of 1'-6"

PLAN
 Scale: 1"=50'

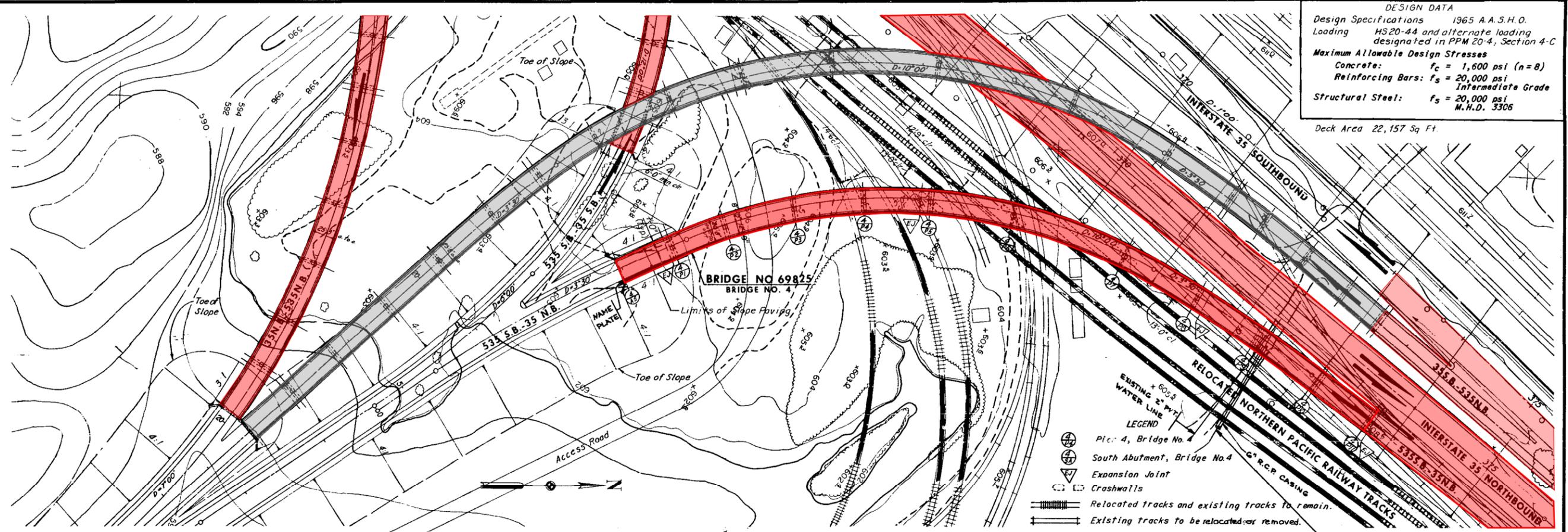
I HEREBY CERTIFY THAT THIS PLAN WAS
 PREPARED UNDER MY DIRECT SUPERVISION
 AND THAT I AM A DULY REGISTERED
 PROFESSIONAL ENGINEER UNDER THE LAWS
 OF THE STATE OF MINNESOTA.

[Signature]
 DATE 12-18-67. REG. NO. 6237

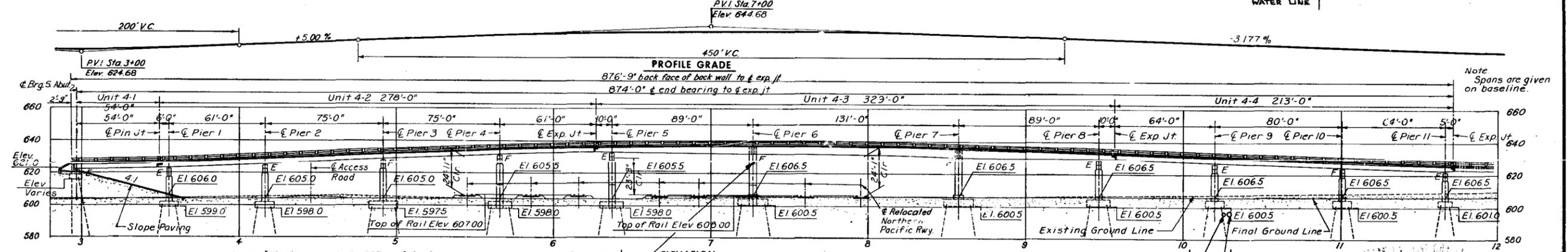
STAGE 3 REMOVALS WP 1 TPI Main

Removals Current Stage
 Removals Previous Stages

DESIGN DATA
 Design Specifications 1965 A.A.S.H.O.
 Loading HS20-44 and alternate loading designated in PPM 20-4, Section 4-C
Maximum Allowable Design Stresses
 Concrete: $f_c = 1,600$ psi ($n=8$)
 Reinforcing Bars: $f_s = 20,000$ psi
 Intermediate Grade
 Structural Steel: $f_s = 20,000$ psi
 M.H.D. 3306
 Deck Area 22,157 Sq Ft



PLAN
 Scale: 1"=50'



ELEVATION
 Scale: 1"=30'

ROADWAY CLEARANCES
 (1) Interstate Lanes:
 Vertical Clearance
 Minimum vertical clearance of 16'-4"
 (2) Ramps:
 Vertical Clearance
 Minimum vertical clearance of 16'-4"

RAILROAD CLEARANCES
 (Includes all tracks)
 Vertical Clearance
 Minimum vertical clearance to be 23'-0" from top of rail to low point of bridge within 8'-6" from track centerline.
 Horizontal Clearance
 Minimum horizontal clearance to be:
 1. Centerline of track to face of column (or crashwall) = 12'-6".
 2. Centerline of track to edge of cap beam = 10'-0".

BENCH MARK DATA
 U.S. Coast and Geodetic Survey Monument E19-1933.
 A standard disk under the Garfield Ave. Bridge at Michigan St. Elevation 609.995.
 Traverse Point "J" top of "T" Iron Elevation 607.80.
 Traverse Point "U" top of "T" Iron Elevation 607.66.
 Traverse Point "Z" top of "T" Iron Elevation 605.50.

VERTICAL CONTROL NOTE
 Elevations shown in the plans are tied to the U.S. level net by second order levels through Bench Mark U.S.C. and G.S. Monument E19-1933. Elevation 609.995.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
 DATE 12-18-67 REG. NO. 2027

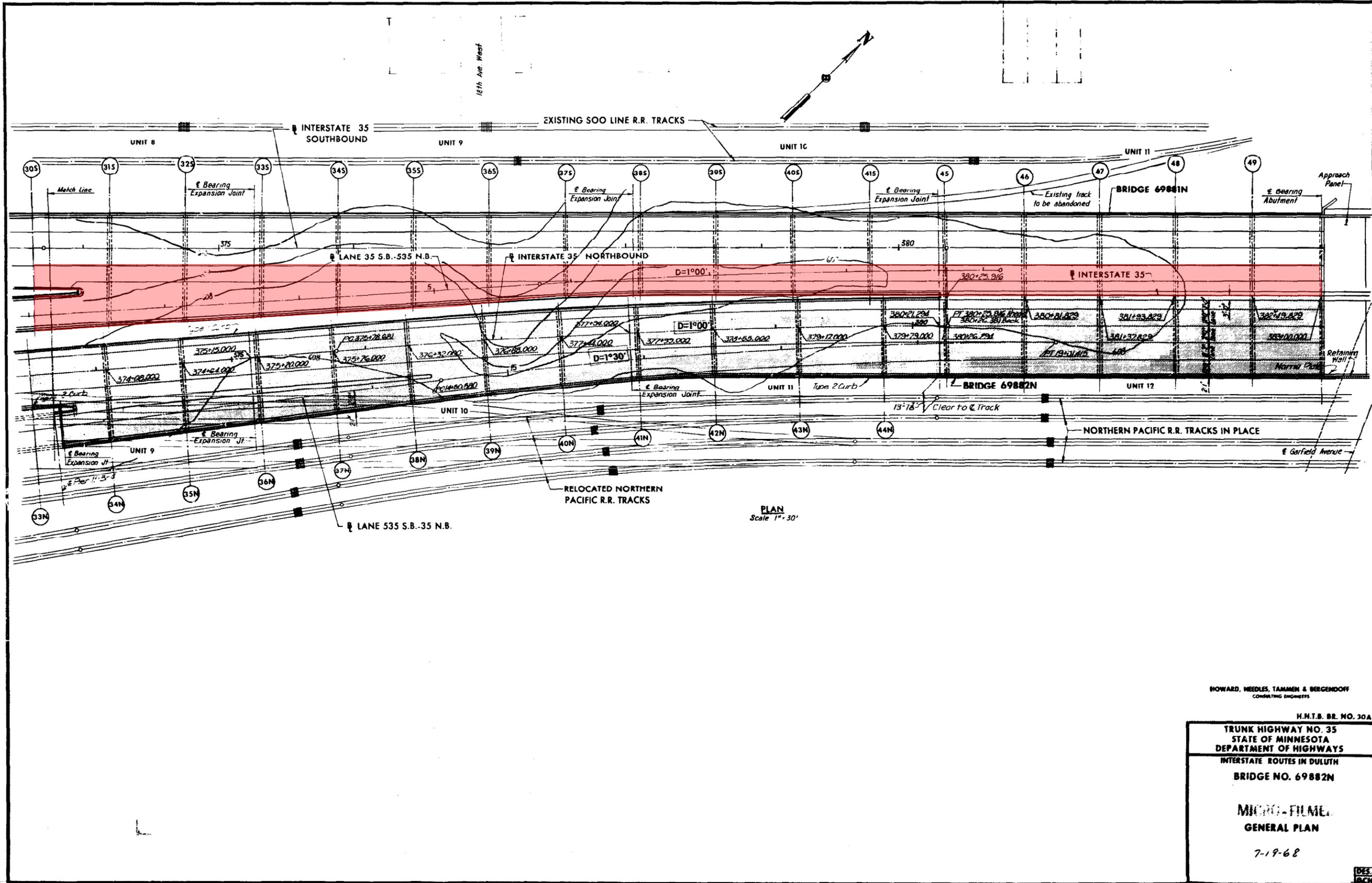
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS

TRUNK HIGHWAY NO. 35
 STATE OF MINNESOTA
 DEPARTMENT OF HIGHWAYS
INTERSTATE ROUTES IN DULUTH
BRIDGE NO. 69825
 TH 535 S.B. AND T.H. 35 N.B. OVER N.P. RY. N.E. OF INTERCHANGE AT 22ND A.V.W. IN DULUTH.
 60'-61'-75'-75'-71'-89'-131'-89'-74'-80'-64' CONTINUOUS AND CANTILEVER BEAM SPANS
 20'-0" ROADWAY 1'-6" SAFETY CURBS
GENERAL PLAN AND ELEVATION
 SEC. 33 TOWNSHIP 50N RANGE 14W
 TWP ST. LOUIS COUNTY
 IN DULUTH Approved: *[Signature]*
 7-22-68
 BRIDGE ENGINEER ASSISTANT DIRECTOR OF OPERATIONS

STAGE 3 REMOVALS WP 1

TPI Main

Removals Current Stage
Removals Previous Stages



PLAN
Scale 1" = 30'

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

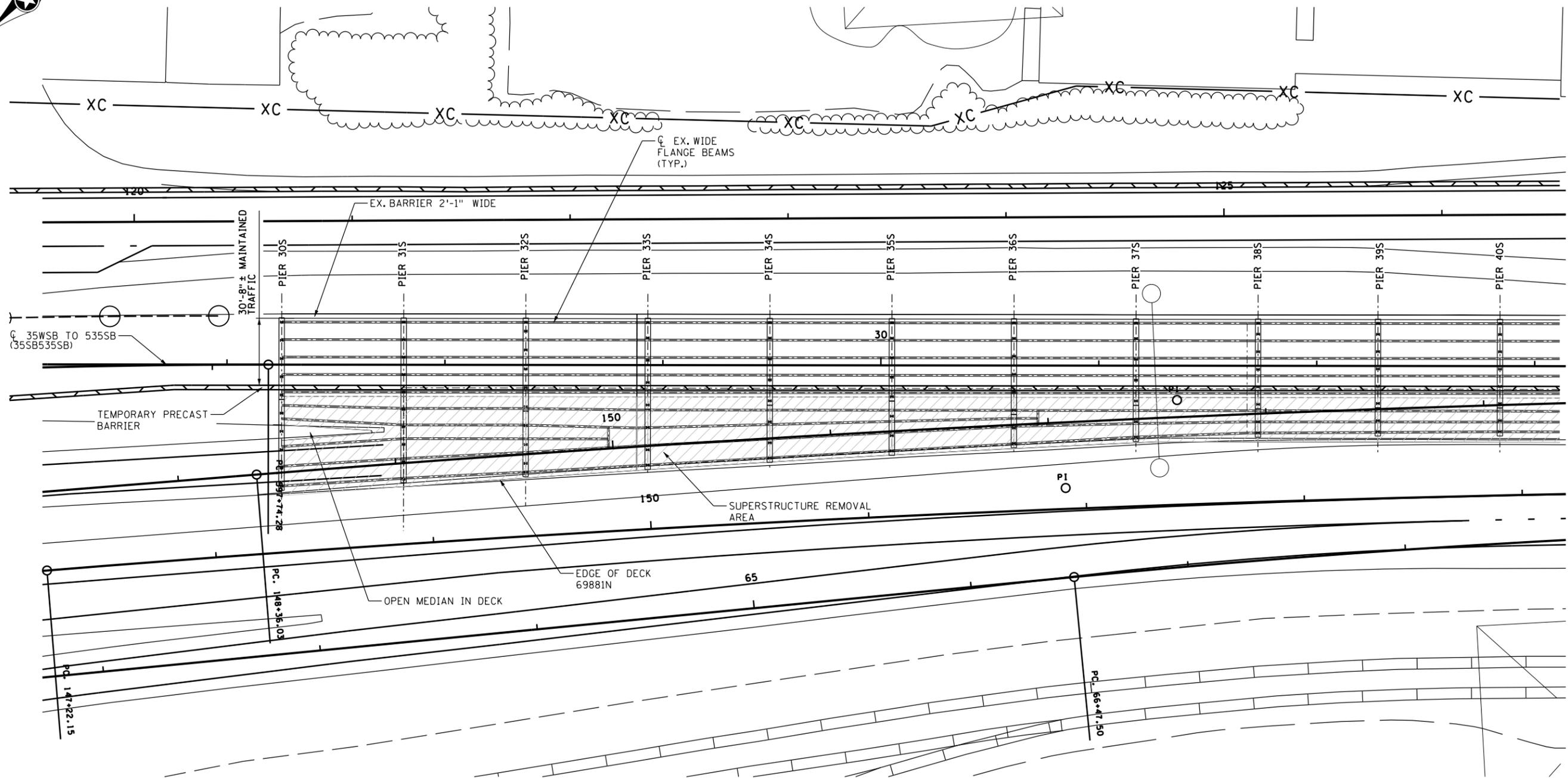
H.N.T.B. BR. NO. 30A

TRUNK HIGHWAY NO. 35
STATE OF MINNESOTA
DEPARTMENT OF HIGHWAYS
INTERSTATE ROUTES IN DULUTH
BRIDGE NO. 69882N

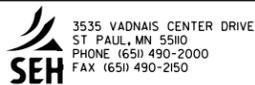
MICRO-FILMED
GENERAL PLAN

7-19-68

SHEET NO. 2 OF 66 SHEETS 69882N
DES. JCH
CHK. RVS



REMOVAL PLAN



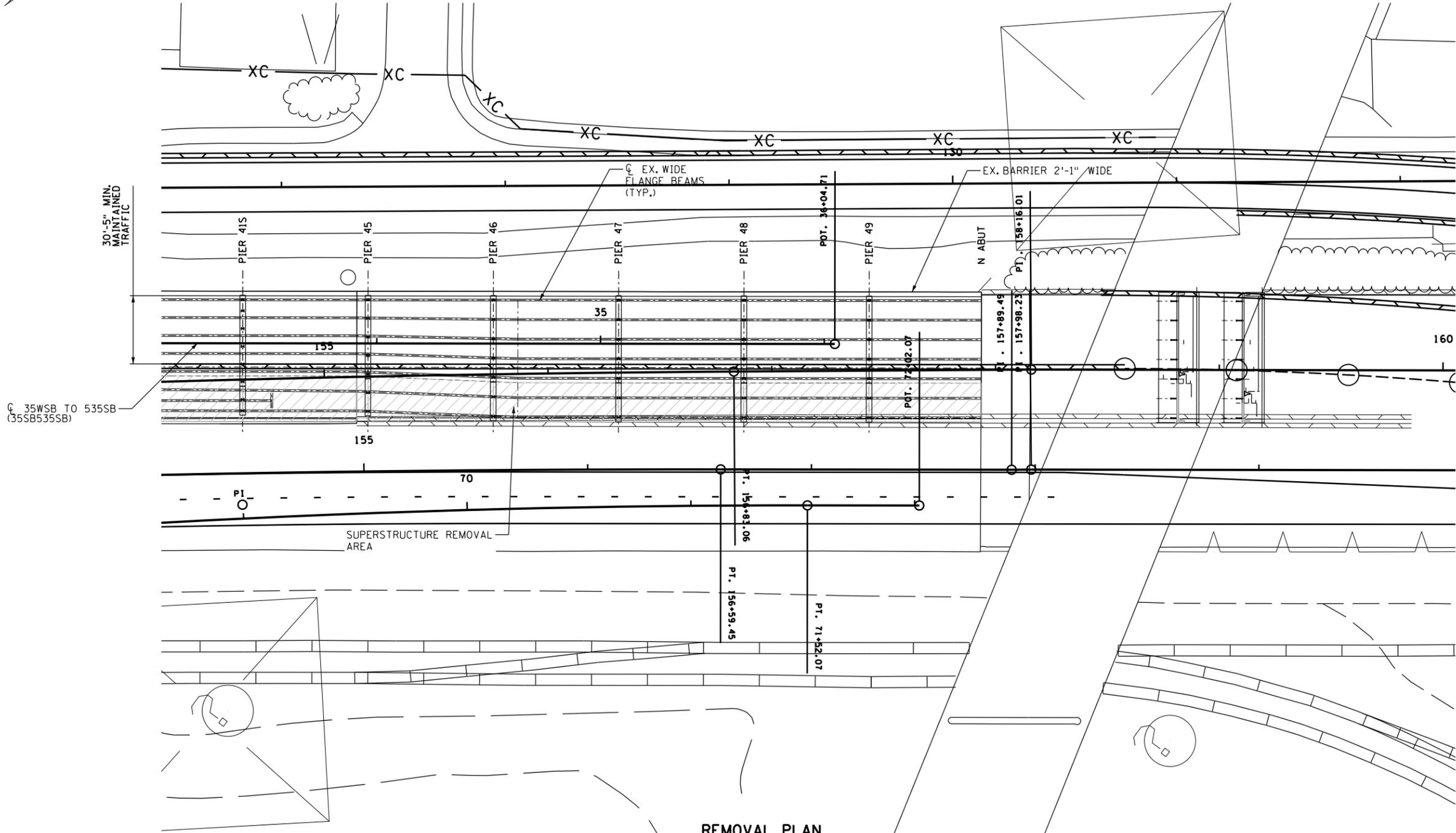
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

CERTIFIED BY _____ DATE _____
LICENSED PROFESSIONAL ENGINEER
NAME: _____ LIC. NO. _____

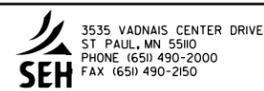
**REMOVAL LIMITS
PLAN**

DES: _____	DR: _____	APPROVED: _____
CHK: _____	CHK: _____	
SHEET 1 OF 7		

**BRIDGE NO
69881N**



REMOVAL PLAN



CERTIFIED BY _____ DATE _____
 LICENSED PROFESSIONAL ENGINEER
 NAME: _____ LIC. NO. _____

REMOVAL LIMITS PLAN

DES:	DR:	APPROVED:
CHK:	CHK:	
SHEET 2 OF 7		

BRIDGE NO 69881N

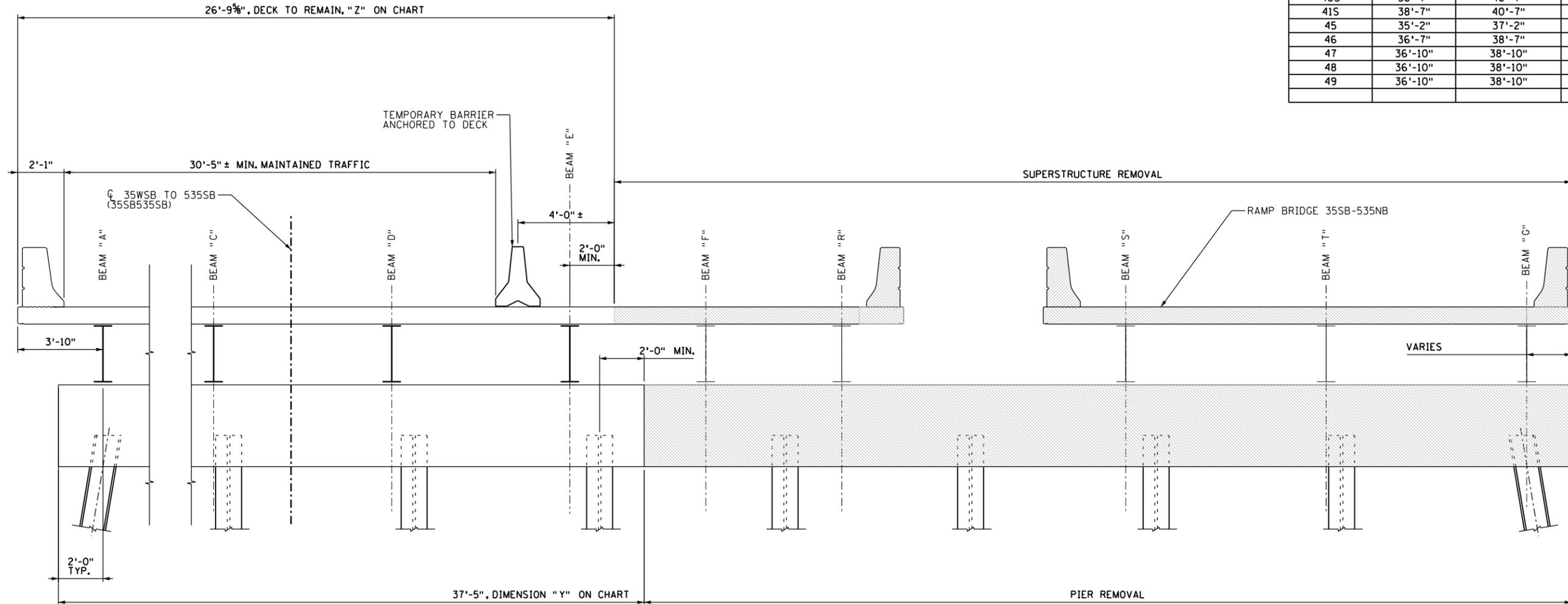
NOTES:

SUPER STRUCTURE REMOVAL: THE INTENT IS TO PLACE THE CUT LINE 2'± TO THE OUTSIDE OF THE INTERIOR BEAM, THIS WOULD POSITION THE TEMPORARY BARRIER TO THE INSIDE OF THE REMAINING BEAM ALLOWING THE TEMPORARY BARRIER LOAD TO BE SPLIT BY TWO GIRDERS. TRAFFIC LOADS WOULD BE SUFFICIENTLY FAR AWAY FROM EXTERIOR BEAM TO NOT REQUIRE ADDITIONAL ANALYSIS FOR LEVER RULE LIVE LOAD EFFECTS.

PIER REMOVAL: THE INTENT IS TO REMOVE THE PIER SO THAT THE BEAM NEAREST THE PIER REMOVAL IS SUPPORTED EITHER DIRECTLY BY A PILE OR SUPPORTED BY A MINIMUM OF TWO PILES IF THE OUTERMOST BEAM LINE IS LOCATED BETWEEN TWO PILES. THE REMAINING PIER SECTION SHOULD EXTEND A MINIMUM OF 2' BEYOND THE OUTER MOST PILE SO THAT THE EXISTING REINFORCEMENT IS DEVELOPED AND THE LOAD ADEQUATELY TRANSFERRED TO THE EXTERIOR PILE

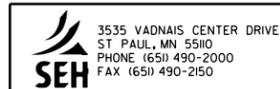
REMOVAL LIMITS ARE DEFINED FROM THE WEST EXTERIOR BEAM LINE, LABELED AS BEAM "A" ON THE EXISTING 69881N BEAM PLANS AND ON THESE SHEETS.

PIER NO.	PIER CUT LOCATION FROM CENTER OF "A" BEAM	DIST. FROM WEST EDGE OF PIER DIST "Y"	DIST. OF DECK CUT LINE, FROM WEST EDGE OF DECK "Z"
30S	34'-0"	37'-5"	37'-10"
31S	34'-0"	36'-0"	37'-10"
32S	40'-8"	42'-8"	37'-10"
33S	39'-9"	41'-9"	37'-10"
34S	37'-9"	39'-9"	37'-10"
35S	35'-10"	37'-10"	37'-10"
36S	33'-8"	35'-8"	37'-10"
37S	37'-8"	39'-8"	37'-10"
38S	39'-1"	41'-1"	37'-10"
39S	38'-7"	40'-7"	37'-10"
40S	38'-7"	40'-7"	37'-10"
41S	38'-7"	40'-7"	37'-10"
45	35'-2"	37'-2"	38'-1"
46	36'-7"	38'-7"	40'-3"
47	36'-10"	38'-10"	40'-8"
48	36'-10"	38'-10"	40'-8"
49	36'-10"	38'-10"	40'-8"



**STAGING REMOVALS FOR 69881N
PIER 30S**

NOTES:



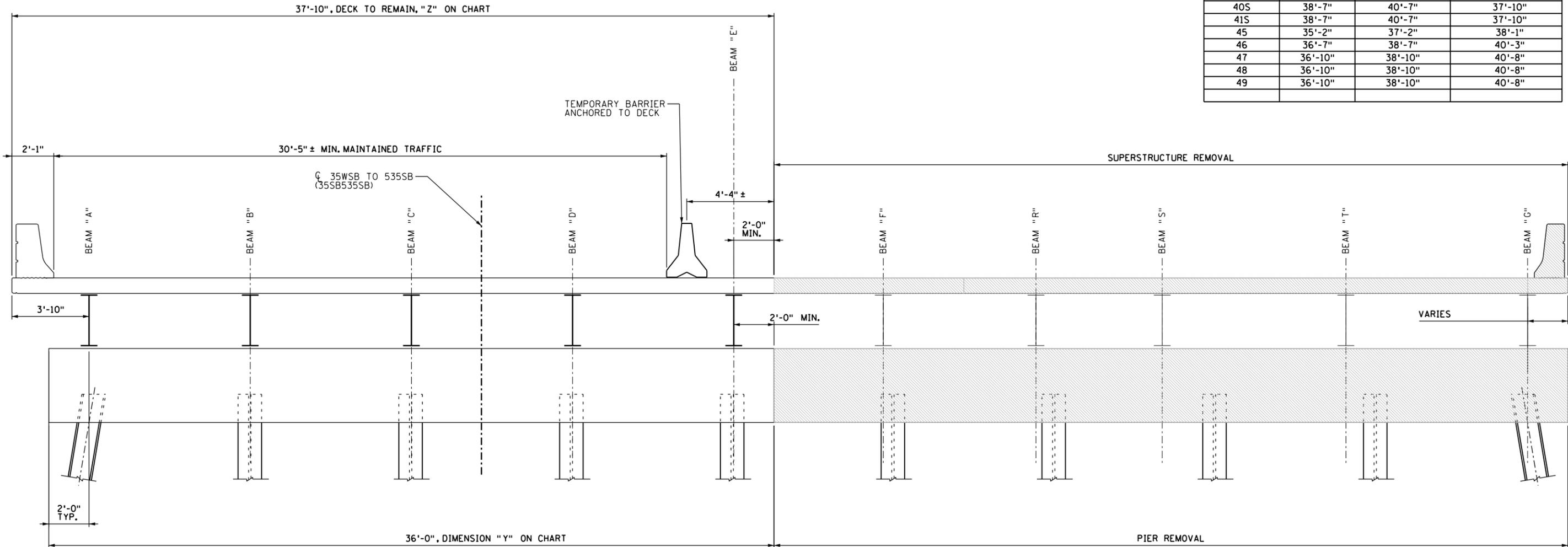
CERTIFIED BY _____ DATE _____
 LICENSED PROFESSIONAL ENGINEER
 NAME: _____ LIC. NO. _____

REMOVAL LIMITS

DES: _____ DR: _____ APPROVED: _____
 CHK: _____ CHK: _____
SHEET 3 OF 7

**BRIDGE NO
69881N**

PIER NO.	PIER CUT LOCATION FROM CENTER OF "A" BEAM	DIST. FROM WEST EDGE OF PIER DIST "Y"	DIST. OF DECK CUT LINE, FROM WEST EDGE OF DECK "Z"
30S	34'-0"	37'-5"	37'-10"
31S	34'-0"	36'-0"	37'-10"
32S	40'-8"	42'-8"	37'-10"
33S	39'-9"	41'-9"	37'-10"
34S	37'-9"	39'-9"	37'-10"
35S	35'-10"	37'-10"	37'-10"
36S	33'-8"	35'-8"	37'-10"
37S	37'-8"	39'-8"	37'-10"
38S	39'-1"	41'-1"	37'-10"
39S	38'-7"	40'-7"	37'-10"
40S	38'-7"	40'-7"	37'-10"
41S	38'-7"	40'-7"	37'-10"
45	35'-2"	37'-2"	38'-1"
46	36'-7"	38'-7"	40'-3"
47	36'-10"	38'-10"	40'-8"
48	36'-10"	38'-10"	40'-8"
49	36'-10"	38'-10"	40'-8"



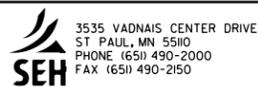
**STAGING REMOVALS FOR 69881N
PIER 31S**

NOTES:

SUPER STRUCTURE REMOVAL: THE INTENT IS TO PLACE THE CUT LINE 2'± TO THE OUTSIDE OF THE INTERIOR BEAM, THIS WOULD POSITION THE TEMPORARY BARRIER TO THE INSIDE OF THE REMAINING BEAM ALLOWING THE TEMPORARY BARRIER LOAD TO BE SPLIT BY TWO GIRDERS. TRAFFIC LOADS WOULD BE SUFFICIENTLY FAR AWAY FROM EXTERIOR BEAM TO NOT REQUIRE ADDITIONAL ANALYSIS FOR LEVER RULE LIVE LOAD EFFECTS.

PIER REMOVAL: THE INTENT IS TO REMOVE THE PIER SO THAT THE BEAM NEAREST THE PIER REMOVAL IS SUPPORTED EITHER DIRECTLY BY A PILE OR SUPPORTED BY A MINIMUM OF TWO PILES IF THE OUTERMOST BEAM LINE IS LOCATED BETWEEN TWO PILES. THE REMAINING PIER SECTION SHOULD EXTEND A MINIMUM OF 2' BEYOND THE OUTER MOST PILE SO THAT THE EXISTING REINFORCEMENT IS DEVELOPED AND THE LOAD ADEQUATELY TRANSFERRED TO THE EXTERIOR PILE

REMOVAL LIMITS ARE DEFINED FROM THE WEST EXTERIOR BEAM LINE, LABELED AS BEAM "A" ON THE EXISTING 69881N BEAM PLANS AND ON THESE SHEETS.



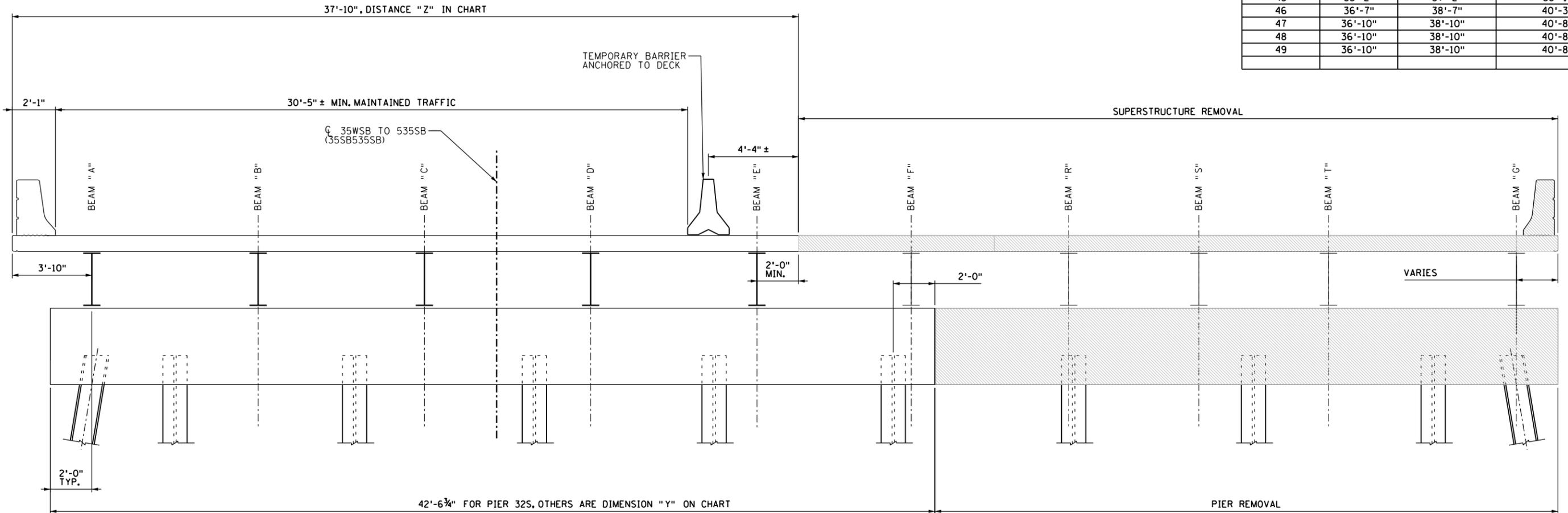
CERTIFIED BY _____ DATE _____
 LICENSED PROFESSIONAL ENGINEER
 NAME: _____ LIC. NO. _____

REMOVAL LIMITS

DES: _____ DR: _____ APPROVED: _____
 CHK: _____ CHK: _____
SHEET 4 OF 7

**BRIDGE NO
69881N**

PIER NO.	PIER CUT LOCATION FROM CENTER OF "A" BEAM	DIST. FROM WEST EDGE OF PIER DIST "Y"	DIST. OF DECK CUT LINE, FROM WEST EDGE OF DECK "Z"
30S	34'-0"	37'-5"	37'-10"
31S	34'-0"	36'-0"	37'-10"
32S	40'-8"	42'-8"	37'-10"
33S	39'-9"	41'-9"	37'-10"
34S	37'-9"	39'-9"	37'-10"
35S	35'-10"	37'-10"	37'-10"
36S	33'-8"	35'-8"	37'-10"
37S	37'-8"	39'-8"	37'-10"
38S	39'-1"	41'-1"	37'-10"
39S	38'-7"	40'-7"	37'-10"
40S	38'-7"	40'-7"	37'-10"
41S	38'-7"	40'-7"	37'-10"
45	35'-2"	37'-2"	38'-1"
46	36'-7"	38'-7"	40'-3"
47	36'-10"	38'-10"	40'-8"
48	36'-10"	38'-10"	40'-8"
49	36'-10"	38'-10"	40'-8"



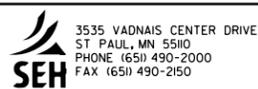
**STAGING REMOVALS FOR 69881N
PIER 32S SHOWN
PIER 33S, 34S, 35S, 36S SIMILAR**

NOTES:

SUPER STRUCTURE REMOVAL: THE INTENT IS TO PLACE THE CUT LINE 2'± TO THE OUTSIDE OF THE INTERIOR BEAM, THIS WOULD POSITION THE TEMPORARY BARRIER TO THE INSIDE OF THE REMAINING BEAM ALLOWING THE TEMPORARY BARRIER LOAD TO BE SPLIT BY TWO GIRDERS. TRAFFIC LOADS WOULD BE SUFFICIENTLY FAR AWAY FROM EXTERIOR BEAM TO NOT REQUIRE ADDITIONAL ANALYSIS FOR LEVER RULE LIVE LOAD EFFECTS.

PIER REMOVAL: THE INTENT IS TO REMOVE THE PIER SO THAT THE BEAM NEAREST THE PIER REMOVAL IS SUPPORTED EITHER DIRECTLY BY A PILE OR SUPPORTED BY A MINIMUM OF TWO PILES IF THE OUTERMOST BEAM LINE IS LOCATED BETWEEN TWO PILES. THE REMAINING PIER SECTION SHOULD EXTEND A MINIMUM OF 2' BEYOND THE OUTER MOST PILE SO THAT THE EXISTING REINFORCEMENT IS DEVELOPED AND THE LOAD ADEQUATELY TRANSFERRED TO THE EXTERIOR PILE

REMOVAL LIMITS ARE DEFINED FROM THE WEST EXTERIOR BEAM LINE, LABELED AS BEAM "A" ON THE EXISTING 69881N BEAM PLANS AND ON THESE SHEETS.

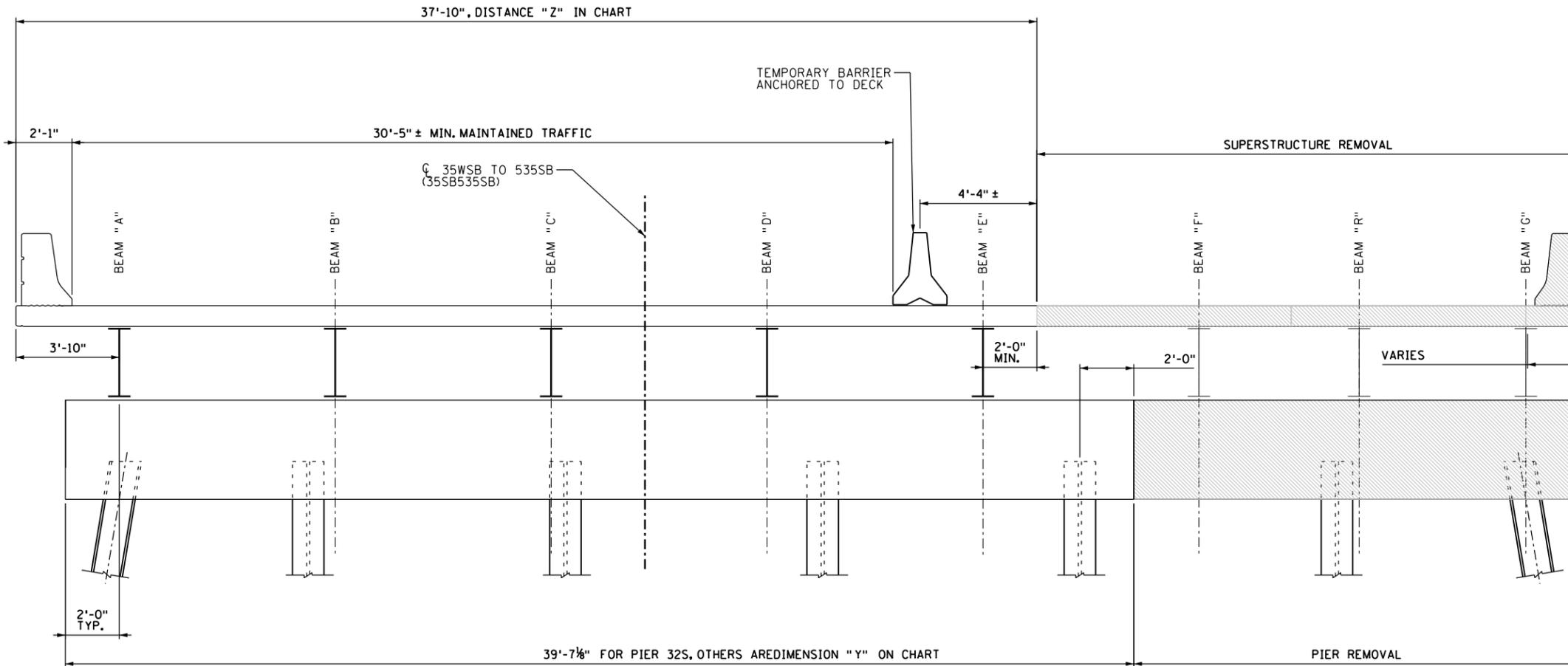


CERTIFIED BY _____ DATE _____
LICENSED PROFESSIONAL ENGINEER
NAME: _____ LIC. NO. _____

REMOVAL LIMITS

DES: _____ DR: _____ APPROVED: _____
CHK: _____ CHK: _____
SHEET 5 OF 7

**BRIDGE NO
69881N**



STAGING REMOVALS FOR 69881N
PIER 37S SHOWN
PIER 33S, 34S, 35S, 36S SIMILAR

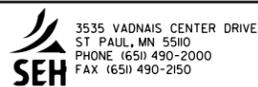
NOTES:

SUPER STRUCTURE REMOVAL: THE INTENT IS TO PLACE THE CUT LINE 2'± TO THE OUTSIDE OF THE INTERIOR BEAM, THIS WOULD POSITION THE TEMPORARY BARRIER TO THE INSIDE OF THE REMAINING BEAM ALLOWING THE TEMPORARY BARRIER LOAD TO BE SPLIT BY TWO GIRDERS. TRAFFIC LOADS WOULD BE SUFFICIENTLY FAR AWAY FROM EXTERIOR BEAM TO NOT REQUIRE ADDITIONAL ANALYSIS FOR LEVER RULE LIVE LOAD EFFECTS.

PIER REMOVAL: THE INTENT IS TO REMOVE THE PIER SO THAT THE BEAM NEAREST THE PIER REMOVAL IS SUPPORTED EITHER DIRECTLY BY A PILE OR SUPPORTED BY A MINIMUM OF TWO PILES IF THE OUTERMOST BEAM LINE IS LOCATED BETWEEN TWO PILES. THE REMAINING PIER SECTION SHOULD EXTEND A MINIMUM OF 2' BEYOND THE OUTER MOST PILE SO THAT THE EXISTING REINFORCEMENT IS DEVELOPED AND THE LOAD ADEQUATELY TRANSFERRED TO THE EXTERIOR PILE

REMOVAL LIMITS ARE DEFINED FROM THE WEST EXTERIOR BEAM LINE, LABELED AS BEAM "A" ON THE EXISTING 69881N BEAM PLANS AND ON THESE SHEETS.

PIER NO.	PIER CUT LOCATION FROM CENTER OF "A" BEAM	DIST. FROM WEST EDGE OF PIER DIST "Y"	DIST. OF DECK CUT LINE, FROM WEST EDGE OF DECK "Z"
30S	34'-0"	37'-5"	37'-10"
31S	34'-0"	36'-0"	37'-10"
32S	40'-8"	42'-8"	37'-10"
33S	39'-9"	41'-9"	37'-10"
34S	37'-9"	39'-9"	37'-10"
35S	35'-10"	37'-10"	37'-10"
36S	33'-8"	35'-8"	37'-10"
37S	37'-8"	39'-8"	37'-10"
38S	39'-1"	41'-1"	37'-10"
39S	38'-7"	40'-7"	37'-10"
40S	38'-7"	40'-7"	37'-10"
41S	38'-7"	40'-7"	37'-10"
45	35'-2"	37'-2"	38'-1"
46	36'-7"	38'-7"	40'-3"
47	36'-10"	38'-10"	40'-8"
48	36'-10"	38'-10"	40'-8"
49	36'-10"	38'-10"	40'-8"

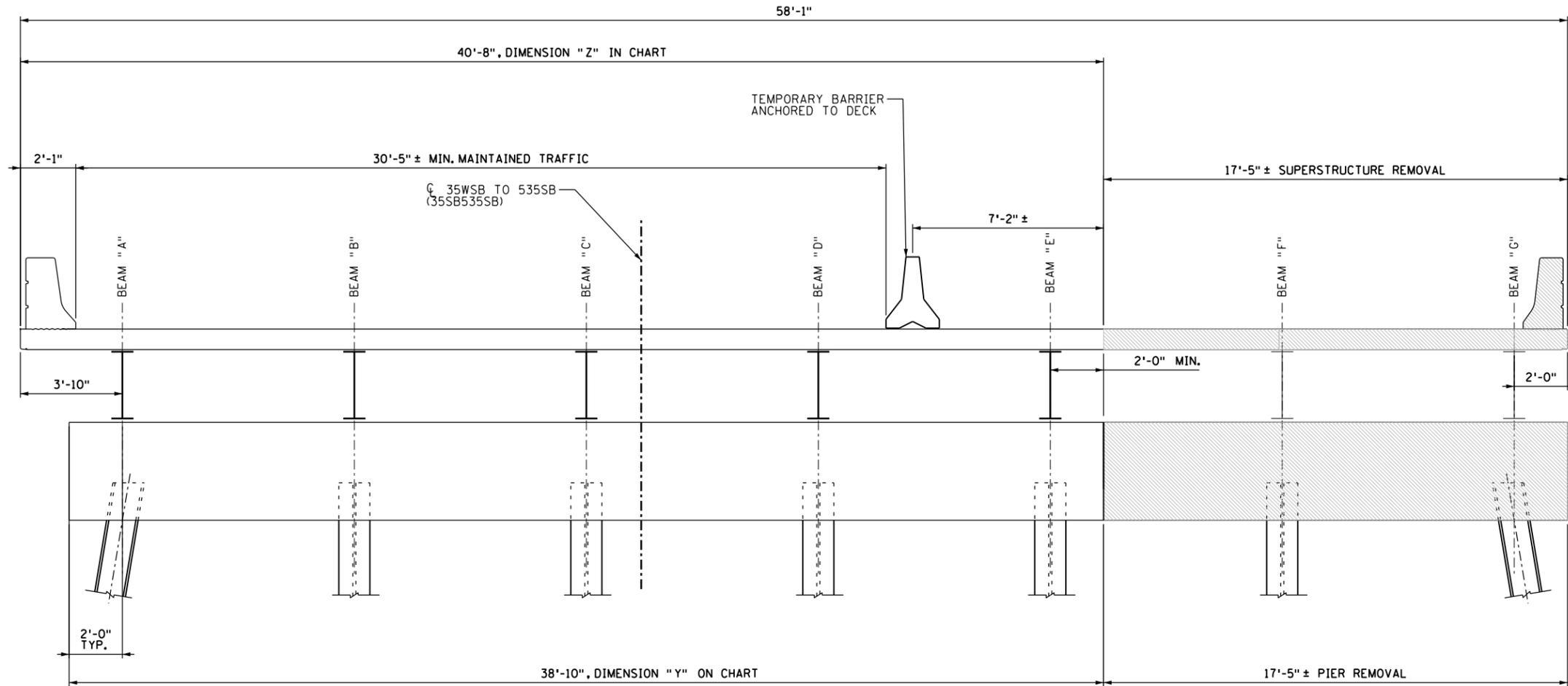


CERTIFIED BY _____ DATE _____
 LICENSED PROFESSIONAL ENGINEER
 NAME: _____ LIC. NO. _____

REMOVAL LIMITS

DES: _____ DR: _____ APPROVED: _____
 CHK: _____ CHK: _____
SHEET 6 OF 7

BRIDGE NO
69881N



STAGING REMOVALS FOR 69881N

PIER 47,48,49

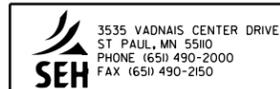
NOTES:

SUPER STRUCTURE REMOVAL: THE INTENT IS TO PLACE THE CUT LINE 2'± TO THE OUTSIDE OF THE INTERIOR BEAM, THIS WOULD POSITION THE TEMPORARY BARRIER TO THE INSIDE OF THE REMAINING BEAM ALLOWING THE TEMPORARY BARRIER LOAD TO BE SPLIT BY TWO GIRDERS. TRAFFIC LOADS WOULD BE SUFFICIENTLY FAR AWAY FROM EXTERIOR BEAM TO NOT REQUIRE ADDITIONAL ANALYSIS FOR LEVER RULE LIVE LOAD EFFECTS.

PIER REMOVAL: THE INTENT IS TO REMOVE THE PIER SO THAT THE BEAM NEAREST THE PIER REMOVAL IS SUPPORTED EITHER DIRECTLY BY A PILE OR SUPPORTED BY A MINIMUM OF TWO PILES IF THE OUTERMOST BEAM LINE IS LOCATED BETWEEN TWO PILES. THE REMAINING PIER SECTION SHOULD EXTEND A MINIMUM OF 2' BEYOND THE OUTER MOST PILE SO THAT THE EXISTING REINFORCEMENT IS DEVELOPED AND THE LOAD ADEQUATELY TRANSFERRED TO THE EXTERIOR PILE

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PIER NO.	PIER CUT LOCATION FROM CENTER OF "A" BEAM	DIST. FROM WEST EDGE OF PIER DIST "Y"	DIST. OF DECK CUT LINE, FROM WEST EDGE OF DECK "Z"
30S	34'-0"	37'-5"	37'-10"
31S	34'-0"	36'-0"	37'-10"
32S	40'-8"	42'-8"	37'-10"
33S	39'-9"	41'-9"	37'-10"
34S	37'-9"	39'-9"	37'-10"
35S	35'-10"	37'-10"	37'-10"
36S	33'-8"	35'-8"	37'-10"
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45	35'-2"	37'-2"	38'-1"
46	36'-7"	38'-7"	40'-3"
47	36'-10"	38'-10"	40'-8"
48	36'-10"	38'-10"	40'-8"
49	36'-10"	38'-10"	40'-8"



CERTIFIED BY _____ DATE _____
 LICENSED PROFESSIONAL ENGINEER
 NAME: _____ LIC. NO. _____

REMOVAL LIMITS

DES: _____ DR: _____ APPROVED: _____
 CHK: _____ CHK: _____
SHEET 7 OF 7

**BRIDGE NO
69881N**