

# PLAN SYMBOLS

QUARTER SECTION LINE	---
SECTION LINE	---
SIXTEENTH SECTION LINE	---
STATE BOUNDARY	---
TOWNSHIP LINE	---
CONTOUR - INDEX	---
CONTOUR - INTERMEDIATE	---
ROAD - TRAIL	---
ROAD - GRAVEL (UNIMPROVED)	---
ROADWAY	---
ROAD - SHOULDER GRAVEL	---
PARKING - GRAVEL (UNIMPROVED)	---
PARKING	---
ROAD - CENTERLINE	---
ENTRANCE	---
CURB	---
GUARDRAIL	---
EXISTING STEAM	---
EXISTING GAS MAIN	---
EXISTING SANITARY SEWER	---
EXISTING STORM DRAIN	---
EXISTING WATER MAIN	---
EXISTING ELEC-UG	---
EXISTING TEL-UG	---
EXISTING TV-UG	---
PROPOSED STEAM	---
PROPOSED GAS MAIN	---
PROPOSED SANITARY SEWER	---
PROPOSED STORM DRAIN	---
PROPOSED WATER MAIN	---
PROPOSED ELEC-UG	---
PROPOSED TEL-UG	---
PROPOSED TV-UG	---
PROPOSED SUB-RAIN	---
CULVERT - (LINE)	---
EXISTING RIGHT OF WAY	---
PROPERTY LINE	---
FENCE - CHAINLINK	---
FENCE - UNIDENTIFIED	---
FENCE - BARB WIRE	---
SIDEWALK - BITUMINOUS	---
RAILROADS	---
PAINTED STREET SYMBOLS	---
CROSSWALK LINES	---
ALLEYS - NO CURBS, CONCRETE	---
RECREATIONAL PATHS	---
TREE - UNIDENTIFIED (LINE)	---
HEDGE	---

# UTILITY SYMBOLS

PROPERTY CORNER	○
CONTROL POINT	△
WATER METER	⊗
WELL	⊕
PEDESTAL (TELEPHONE CABLE TERMINAL)	⊗
PEDESTAL (TELEVISION CABLE TERMINAL)	⊗
PARKING METER - SINGLE	⊗
PARKING METER - DOUBLE	⊗
FIRE HYDRANT	⊗
GAS SHUT OFF VALVE	⊗
GAS VALVE	⊗
WATER SHUT OFF VALVE	⊗
WATER VALVE	⊗
EXISTING CATCH BASIN	⊗
EXISTING ELECTRIC MANHOLE	⊗
EXISTING GAS MANHOLE	⊗
EXISTING SANITARY MANHOLE	⊗
EXISTING STEAM MANHOLE	⊗
EXISTING STORM MANHOLE	⊗
EXISTING TELEPHONE MANHOLE	⊗
EXISTING TELEPHONE VAULT	⊗
EXISTING TELEVISION MANHOLE	⊗
EXISTING WATER MANHOLE	⊗
EXISTING WATER & GAS MANHOLE	⊗
PROPOSED CATCH BASIN	⊗
PROPOSED ELECTRIC MANHOLE	⊗
PROPOSED GAS MANHOLE	⊗
PROPOSED SANITARY MANHOLE	⊗
PROPOSED STEAM MANHOLE	⊗
PROPOSED STORM MANHOLE	⊗
PROPOSED TELEPHONE MANHOLE	⊗
PROPOSED TELEPHONE VAULT	⊗
PROPOSED TELEVISION MANHOLE	⊗
PROPOSED WATER MANHOLE	⊗
PROPOSED WATER & GAS MANHOLE	⊗
AND	⊗
ELECTRICAL BOX	⊗
ELECTRICAL VAULT	⊗
ELECTRICAL HAND HOLE (PULL BOX)	⊗
ELECTRICAL METER	⊗
ELECTRICAL PANEL	⊗
ELECTRICAL TRANSFORMER BOX	⊗
EXISTING LIGHT POLE	⊗
PROPOSED LIGHT POLE	⊗
LITE ON POWER POLE	⊗
POLE - ELECTRICAL W/TRANSFORMER	⊗
LUMIN	⊗
LUMIN2	⊗
POWER POLE	⊗
SIGNAL VAULT	⊗
TRAFFIC SIGNAL	⊗
TRAFFIC SIGNAL POLE	⊗
ANCHOR	⊗
BUSH	⊗
SWAMP - (SYMBOL)	⊗
TREE - UNIDENTIFIED (SYMBOL)	⊗
TREE - EVERGREEN	⊗
SOIL BORING	⊗
SIGN - UNIDENTIFIED (SYMBOL)	⊗
MONUMENT	⊗

# MINNESOTA DEPARTMENT OF TRANSPORTATION

# CITY OF DULUTH

## DEPARTMENT OF PUBLIC WORKS AND UTILITIES

## ENGINEERING DIVISION

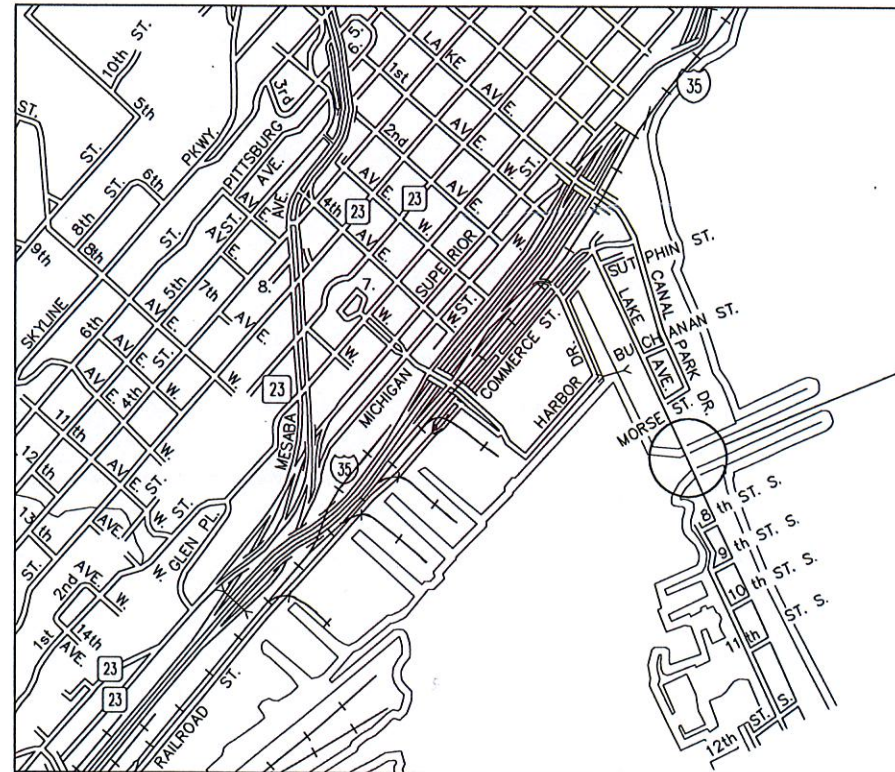
CONSTRUCTION PLANS FOR: REPLACEMENT OF ROAD SURFACE GRATING ON  
DULUTH AERIAL LIFT BRIDGE, BRIDGE NO. L6116

GEOGRAPHIC LOCATION: MSAS 140 (LAKE AVENUE SOUTH) FROM SOUTH OF MORSE STREET  
TO NORTH OF 8TH STREET

LEGAL DESCRIPTION: FROM A POINT THAT IS 4530 FEET EAST TO A POINT THAT IS 4740 FEET EAST  
AND 360 FEET NORTH OF THE S.W. CORNER AND 100 FEET SOUTH OF THE S.W. CORNER  
OF SECTION 27, T50N, R14W OF THE SAID SECTION

STATE AID PROJ. NO. 118-140-032

GROSS LENGTH	502.00	FEET	0.095	MILES
BRIDGES-LENGTH	502.00	FEET	0.095	MILES
EXCEPTIONS-LENGTH		FEET		MILES
NET LENGTH	502.00	FEET	0.095	MILES



PROJECT LOCATION  
S.A.P. NO. 118-140-032  
BRIDGE NO. L6116

**WARNING**  
LOCATION OF UNDERGROUND UTILITIES  
TO BE VERIFIED BY CONTRACTOR.  
CALL BEFORE DIGGING.  
GOPHER STATE ONE CALL  
1-800-252-1166  
REQUIRED BY LAW

INDEX MAP

## SCALES

PLAN	0	30
ELEVATION	0	30
INDEX MAP	0	1500



PROJECT LOCATION:  
CITY OF DULUTH  
ST. LOUIS COUNTY  
SEC. 27 T50N R14W



LHB INC.  
DULUTH • MINNEAPOLIS  
21 N. Superior St., Ste. 500, DULUTH, MN 55802  
TEL 218/727-4446 • FAX 218/727-9456

LHB PROJECT. No. 150588.00

City of Duluth Proj. No. 1015

S.A.P. No. 118-140-032

# GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION  
"STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.  
(AVAILABLE AT: <http://www.dot.state.mn.us/pre-letting/spec/>)

THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES DEPARTMENT ENGINEERING DIVISION 2017  
EDITION STANDARD CONSTRUCTION SPECIFICATIONS SHALL APPLY.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE  
MN MUTCD, INCLUDING THE FIELD MANUAL DATED "LATEST EDITION".  
(AVAILABLE AT: <http://www.dot.state.mn.us/trafficeng/>)

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

# INDEX

SHEET No.	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES & STATEMENT OF ESTIMATED QUANTITIES
3	GENERAL PLAN, ELEVATION & SCOPE OF WORK
4	GRATING REPLACEMENT PLAN
5	GRATING REPLACEMENT TRANSVERSE SECTION
6	GRATING REPLACEMENT LONGITUDINAL SECTION
7-9	TRAFFIC CONTROL
10	AS BUILT BRIDGE DATA

THIS PLAN CONSISTS OF 10 SHEETS

# DESIGN DESIGNATION (MSAS 140)

PROJECT	2017	BASED ON STOPPING SIGHT DISTANCE
ADT (CURRENT YEAR) 2017	7699	HEIGHT OF OBJECT = 2.0 FT.
ADT (FUTURE YEAR) 2037	9239	HEIGHT OF EYE = 3.5 FT.
HCACT (CURRENT)		FUNCTIONAL CLASSIFICATION: URBAN COLLECTOR
HCACT (FUTURE)		
STRUCTURE DESIGN	9 (6)	
SOIL FACTOR	130	
DESIGN SPEED	30	

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT 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

PROJECT ENGINEER *Joseph D. Litman*

JOSEPH D. LITMAN 08/14/2017 21833  
PROJECT ENGINEER (TYPED OR PRINTED NAME) DATE LIC. No.

CITY APPROVALS:

APPROVED *[Signature]* 8/14/17  
CHIEF ENGINEER OF TRANSPORTATION DATE

APPROVED *[Signature]* 8/14/17  
CHIEF ENGINEER OF UTILITIES DATE

APPROVED *[Signature]* 8/14/17  
CITY ENGINEER DATE

STATE AID APPROVALS:

*[Signature]* 8-16-17  
DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE DATE  
WITH STATE-AID RULES/POLICY

*[Signature]* 8-16-17  
STATE AID ENGINEER: APPROVED FOR STATE AID FUNDING DATE



GENERAL NOTES:

DESIGN SPECIFICATIONS:

- THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

MISCELLANEOUS:

- DIMENSIONS SHOWN ON EXISTING DETAILS ARE TAKEN FROM AVAILABLE PLANS, SUPPLEMENTED BY LIMITED FIELD MEASUREMENTS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS, ELEVATIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF ALL WORK BY FIELD MEASUREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF AND SHALL NOT COMMENCE ANY FABRICATION UNTIL THE NECESSARY MEASUREMENTS ON THE ACTUAL STRUCTURE HAVE BEEN MADE AND SUBMITTED SHOP DRAWINGS HAVE BEEN APPROVED BY THE ENGINEER. SHOP DRAWINGS SHALL STATE THAT THE CONTRACTOR HAS VERIFIED THE EXISTING DIMENSIONS.

- DURING THE COURSE OF THE WORK, THE CONTRACTOR SHALL NOT DAMAGE OR CONTAMINATE ANY EXISTING ITEMS WHICH ARE TO REMAIN. ANY DAMAGE DONE TO EXISTING ITEMS TO REMAIN SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE CITY.

MARINE CLOSURES/IMPACTS:

- SEE SPECIAL PROVISIONS FOR PERMITTED BRIDGE MARINE CLOSURE PERIOD AND REQUIRED WORK PERIOD.

- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE CONSTRUCTION STAGING SEQUENCE AND GET WRITTEN APPROVAL PRIOR TO BEGINNING WORK.

MAINTENANCE AND PROTECTION OF TRAFFIC:

- ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MUTCD, INCLUDING THE FIELD MANUAL "LATEST EDITION".
- THE CONTRACTOR SHALL MAINTAIN AND PROTECT ALL VEHICULAR AND PEDESTRIAN TRAFFIC FOR THE DURATION OF THE PROJECT. ALL WORK SHALL BE COORDINATED SO AS TO MINIMIZE DISRUPTION TO VEHICULAR, PEDESTRIAN AND MARINE TRAFFIC. SEE SPECIAL PROVISIONS FOR ADDITIONAL DETAILS.
- ANY NECESSARY ROADWAY CLOSURES OVER 10 MINUTES IN DURATION SHALL BE SCHEDULED WITH AND APPROVED BY THE CITY IN ADVANCE. ALL OTHER PROVISIONS FOR MAINTENANCE AND PROTECTION OF TRAFFIC ARE PROVIDED BY THE SPECIFICATIONS.
- DURING CONSTRUCTION THE CONTRACTOR SHALL NOT BE ALLOWED TO DROP WASTE MATERIALS, DEBRIS, AND OTHER MATERIALS TO THE AREAS ADJACENT TO THE BRIDGE. PLATFORMS, NETS, SCREENS, OR OTHER PROTECTIVE DEVICES SHALL BE USED TO CATCH THE MATERIAL. IF THE ENGINEER DETERMINES THAT ADEQUATE PROTECTIVE DEVICES ARE NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
- ALL MATERIAL FALLING ON THE AREA BELOW AND ADJACENT TO THE BRIDGE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO COST TO THE CITY/STATE.
- THE COST OF FURNISHING, INSTALLING, MAINTAINING, REMOVING AND DISPOSING OF ALL ACCESS EQUIPMENT, PLATFORMS, NETS, SCREENS, OR OTHER PROTECTIVE DEVICES SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE APPROPRIATE ITEMS OF THE CONTRACT.

STRUCTURAL NOTES:

STRUCTURAL STEEL:

- STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS AS SHOWN IN THE PLANS AND SPECIFIED IN THE SPECIAL PROVISIONS.
- FOLLOWING FIELD DIMENSION VERIFICATION CONTRACTOR SHALL SUBMIT GRATING SHOP DRAWINGS FOR APPROVAL TO ENGINEER PRIOR TO FABRICATION/ORDERING OF GRATING
- GRATING SHALL BE GALVANIZED PER MnDOT SPEC 3394.
- WELDING SHALL MEET REQUIREMENTS OF MnDOT SPEC 2402.

STATEMENT OF ESTIMATED QUANTITIES					
BID ITEM	SPEC. NO.	ITEM	UNIT	ESTIMATED QUANTITY	FINAL QUANTITY
1	2021.501	MOBILIZATION	LUMP SUM	1	
① 2	2104.501	REMOVE STEEL BEAMS	LIN FT	48 (P)	
② 3	2402.521	STRUCTURAL STEEL (3309)	POUND	1270 (P)	
③ 4	2402.618	BRIDGE DECK GRATING	SQ FT	1205 (P)	
④ 5	2433.505	REMOVE SUPERSTRUCTURE	SQ FT	1205 (P)	
⑤ 6	2478.502	ORGANIC ZINC-RICH PAINT SYSTEM (SHOP)	SQ FT	145 (P)	
7	2563.601	TRAFFIC CONTROL	LUMP SUM	1	

NOTES:

- ① INCLUDES THE REMOVAL OF THE IN PLACE TRANSVERSE DECK GRATING SHIMS AT BOTH THE NORTH AND SOUTH INTERMEDIATE FLOORBEAMS AND GRINDING/CLEANING OF THE TOP OF THE IN PLACE TRANSVERSE FLOORBEAM TO RECEIVE PROPOSED DECK GRATING SHIM.
- ② WEIGHT INCLUDES THE TRANSVERSE DECK GRATING SHIM TO BE FUNRISHED AND INSTALLED ON TOP OF THE NORTH AND SOUTH INTERMEDIATE FLOORBEAMS. INCIDENTAL TO THIS WORK SHALL BE THE TOUCH UP PAINTING TO THE TOP OF THE INTERMEDIATE FLOORBEAM FLANGE AND TRANSVERSE SHIM FOLLOWING WELDING.
- ③ FURNISHING AND INSTALLATION OF THE PROPOSED DECK GRATING AS DETAILED IN THE PLAN INCLUDING EXPANSION GAP PLATE AT NORTH END AND 1 1/2 X 1 1/2 ANGLE AT THE SOUTH END. WORK SHALL INCLUDE, BUT NOT LIMITED TO, FURNISHING AND INSTALLING PROPOSED DECK GRATE, FURNISHING AND INSTALLING SECONDARY SHIMS WHERE REQUIRED TO PROVIDE POSITIVCE CONTACT AT ALL SUPPORT POINTS AND PROPER CROSS SLOPE OF THE BRIDGE, AND ALL WELDING TO INSTALL THE GRATING AND SECONDARY SHIMS AND/OR DECK GRATING.
- ④ WORK SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE IN PLACE DECK GRATING TO THE LIMITS AS SHOWN IN THE PLAN. ADDITIONALLY WORK SHALL INCLUDE THE GRINDING CLEAN OF THE TOPS OF THE END FLOORBEAMS AND PURLIN SHIM PLATES TO RECIEVE PROPOSED SECONDARY SHIMS AND/OR DECK GRATING.
- ⑤ "ORGANIC ZINC RICH PAINT SYSTEM (SHOP)" SHALL BE A SHOP APPLIED PAINT SYSTEM SELECTED FROM MnDOT'S APPROVED PRODUCT LIST AND THE TOP COAT SHALL MATCH IN PLACE BRIDGE PAINT COLOR. SUBMIT TOP COAT COLOR SAMPLE TO ENGINEER FOR APPROVAL.

- WITHIN THE PLAN, WHEREVER THE WORD INCIDENTAL IS USED IT SHALL MEAN NO DIRECT PAYMENT WILL BE MADE FOR THAT ITEM

- (P) INDICATES PLAN QUANTITY.

- V.I.F. = VERIFY IN FIELD

STANDARD PLATES	
THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.	
PLATE NUMBER	DESCRIPTION
8000J	CHANNELIZERS
8337C	TEMPORARY PORTABLE PRECAST BARRIER

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT 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.

NAME: Joseph D. Litman LIC. NO. 21833 DATE 08/14/2017

JOSEPH D. LITMAN

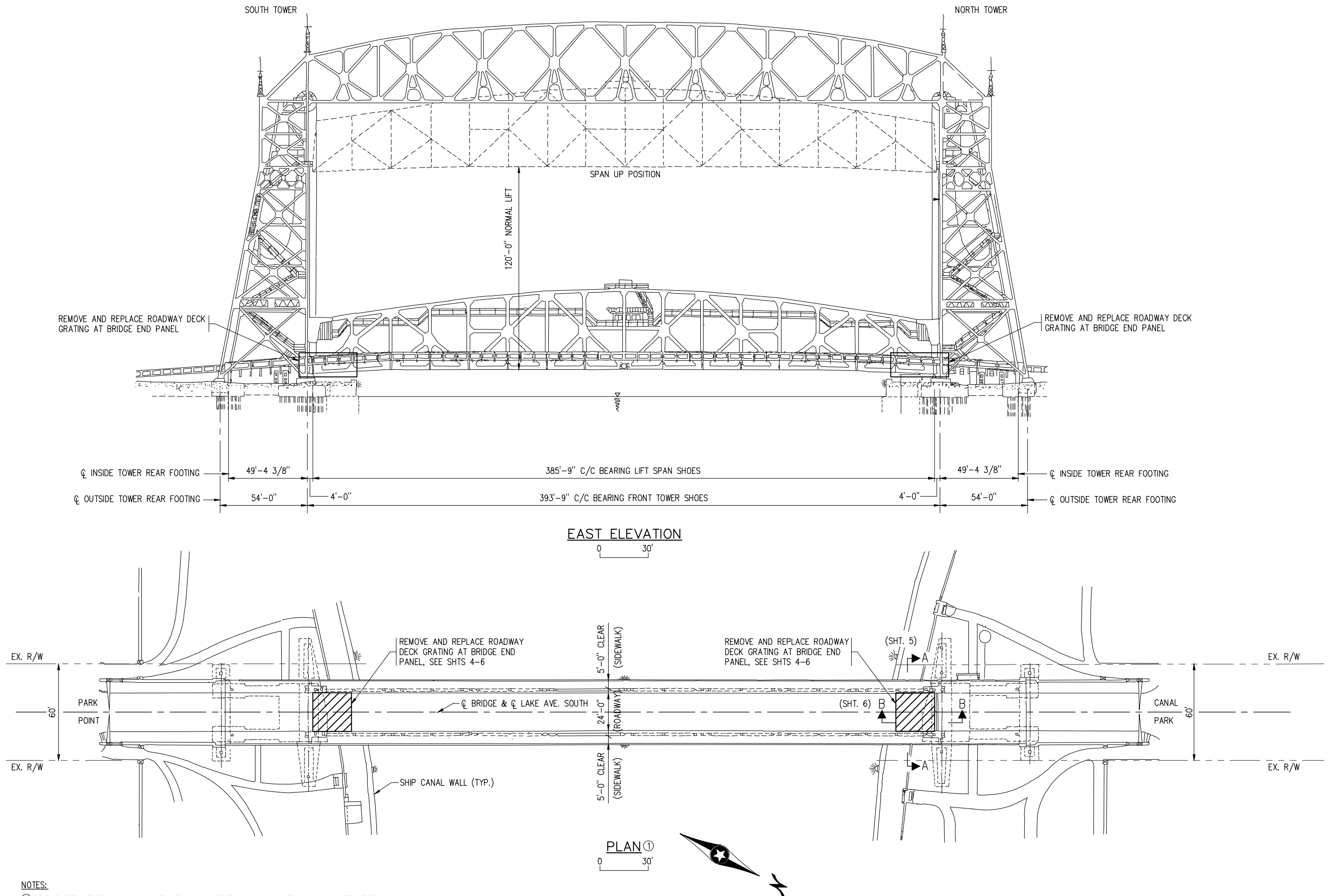
TITLE:

GENERAL NOTES & STATEMENT OF ESTIMATED QUANTITIES

DES: CJM	DR: CJM	APPROVED:
CHK: JDL	CHK: JDL	
Sheet No. 2 of 10 Sheets		

Bridge No.

L6116



State Aid Proj. No. 118-140-032

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT 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.

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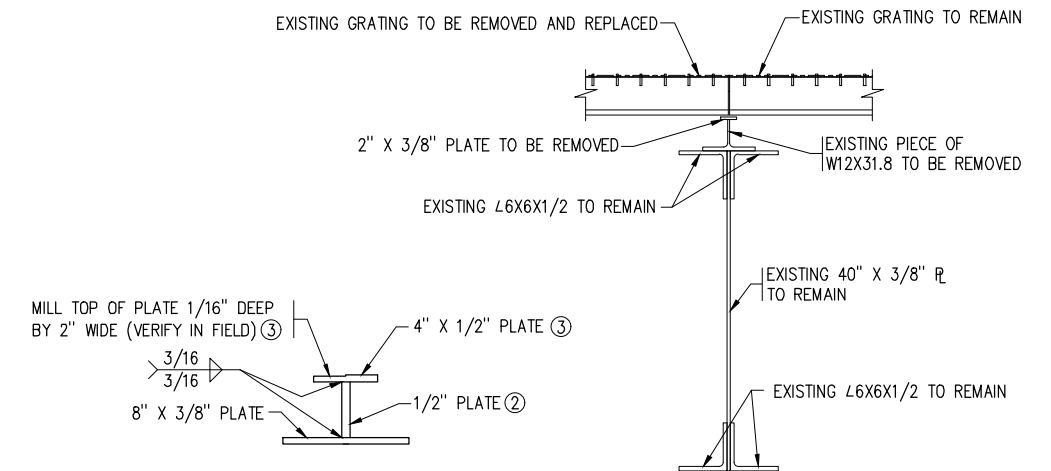
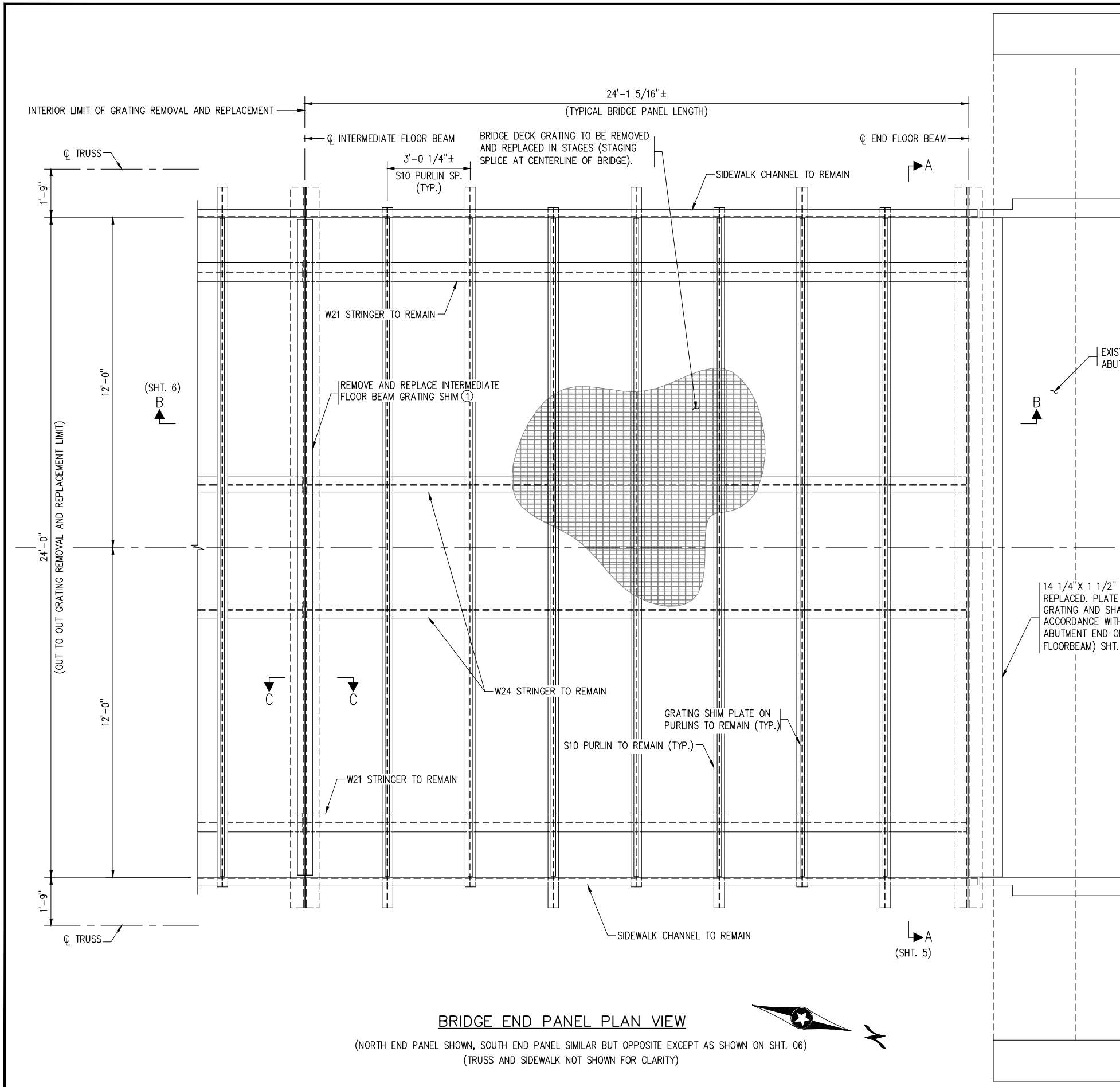
JOSEPH D. LITMAN

TITLE:

GENERAL PLAN, ELEVATION & SCOPE OF WORK

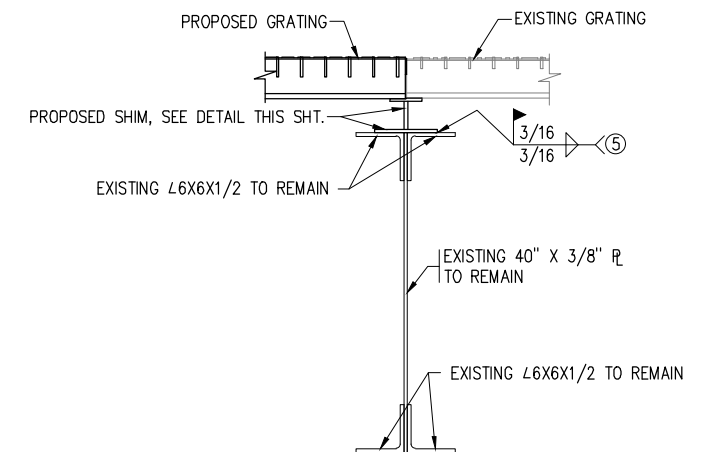
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CHK: JDL	CHK: JDL	
Sheet No. 3 of 10 Sheets		

Bridge No. L6116



PROPOSED SHIM DETAIL ④

SECTION C-C ①  
(EXISTING)



SECTION C-C ① ④  
(PROPOSED)

KEY NOTES:

- ① REMOVE EXISTING PIECE OF W12X31.8 & 2" X 3/8" PLATE WHICH COMPRISE THE IN PLACE GRATING SHIM AND REPLACE PER SECTION C-C (PROPOSED). REMOVAL OF EXISTING STEEL SHIM AND ALL REQUIRED CLEANING AND GRINDING TO TOP OF EXISTING FLOORBEAM TO RECEIVE NEW SHIM SHALL BE INCLUDED IN PRICE BID FOR ITEM "REMOVE STEEL BEAMS". FURNISHING AND INSTALLATION OF PROPOSED DECK GRATING SHIM AND ALL WELDING REQUIRED TO INSTALL AS DETAILED SHALL BE PAID FOR UNDER ITEM "STRUCTURAL STEEL (3309)" REMOVAL AND REPLACEMENT OF GRATING SHIM SHALL BE DONE UNDER THE STAGED CONSTRUCTION OF THE GRATING REPLACEMENT. UPON COMPLETION, FIELD WELD 3/8" AND 1/2" SHIM PLATES AT CENTERLINE OF BRIDGE WITH A BEVELED BUTT WELD.
- ② HEIGHT OF 1/2" PLATE SHALL VARY AS REQUIRED TO MAINTAIN EXISTING BRIDGE CROSS SLOPE. AND ALIGN NEW GRATING WITH EXISTING.
- ③ MILL ONE HALF OF TOP SIDE OF 4" X 1/2" PLATE 1/16" DEEP (FIELD VERIFY) TO ENABLE PROPOSED DEEPER GRATING SECTION TO INSTALL FLUSH WITH EXISTING. SEE DETAIL "B" SHT 6 FOR ADDITIONAL DETAILS.
- ④ PROPOSED BUILT UP DECK GRATING SHIM SHALL BE SHOP COATED WITH A MnDOT PRE-APPROVED ORGANIC ZINC RICH PAINT SYSTEM WITH TOP COAT TO MATCH IN PLACE BRIDGE COLOR. PAID FOR UNDER ITEM "ORGANIC ZINC RICH PAINT SYSTEM (SHOP)".
- ⑤ TOUCH UP PAINT AT WELDING LOCATIONS, (TOUCH UP AT WELDING LOCATIONS SHALL BE INCIDENTAL)

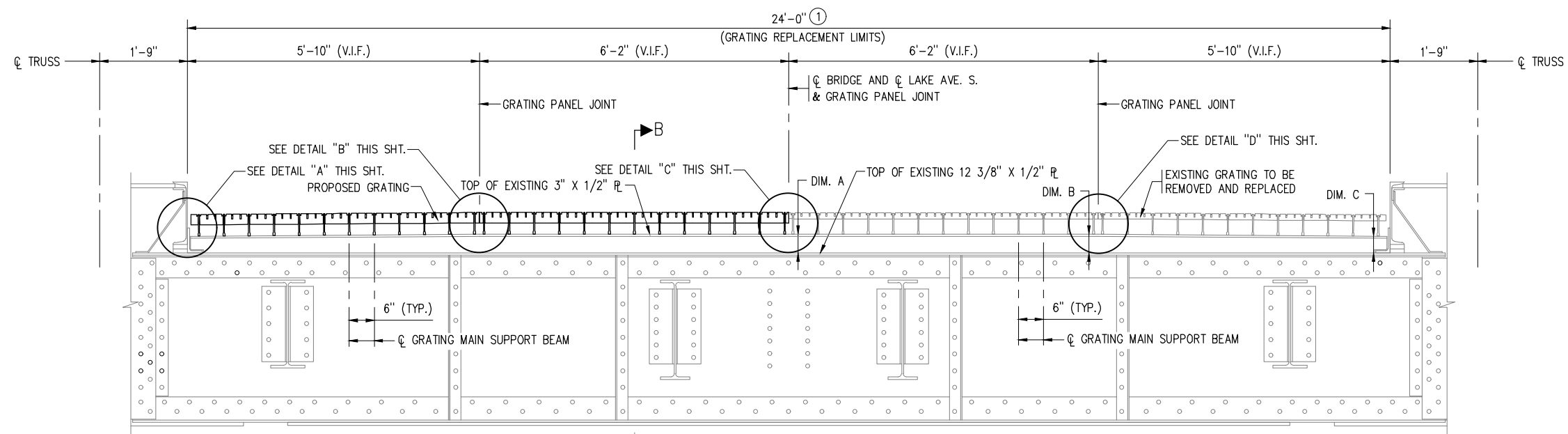
State Aid Proj. No. 118-140-032

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NAME: Joseph D. Litman LIC. NO. 21833 DATE 08/14/2017  
JOSEPH D. LITMAN

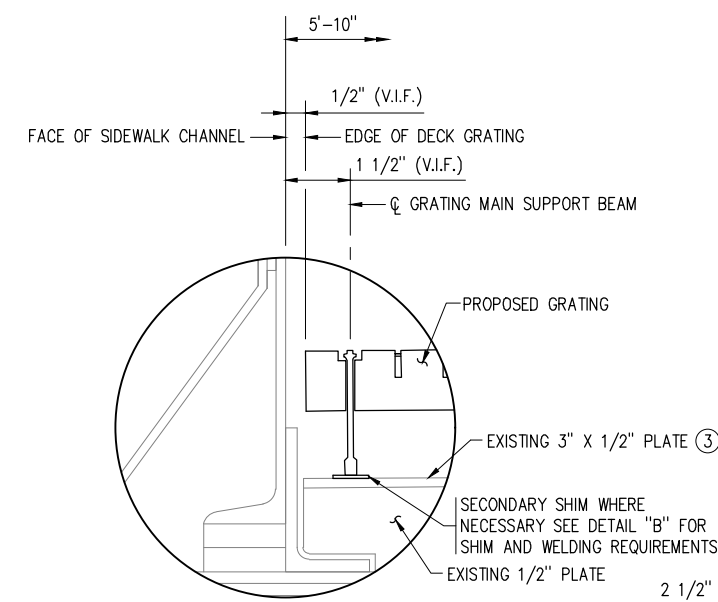
TITLE: GRATING REPLACEMENT PLAN

DES: CJM	DR: CJM	APPROVED:
CHK: JDL	CHK: JDL	
Sheet No. 4 of 10 Sheets		

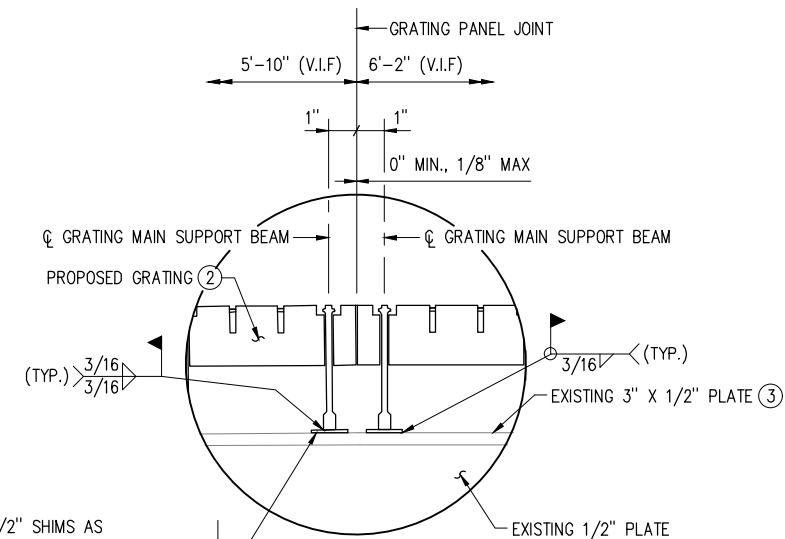
Bridge No. L6116



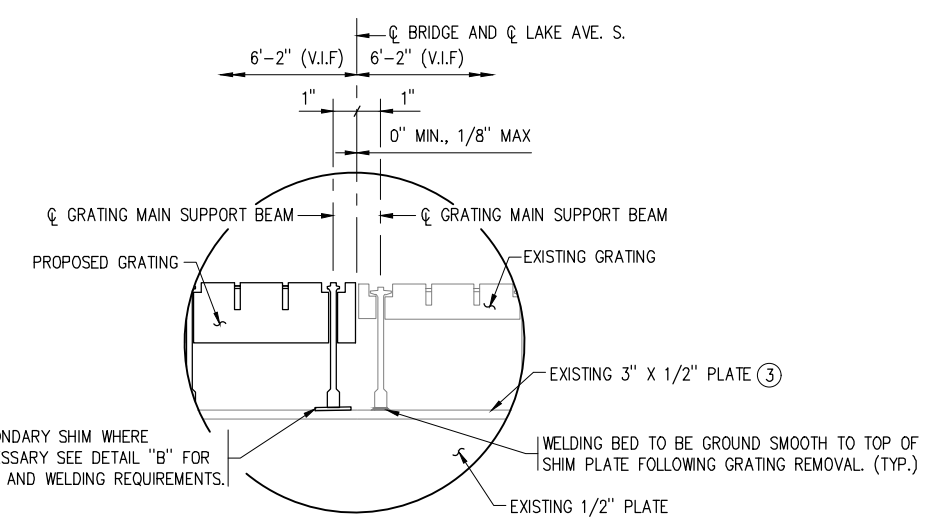
**SECTION A-A**  
(NORTH END FLOORBEAM SHOWN, SOUTH SIMILAR)  
(STAGE 1 CONSTRUCTION SHOWN, STAGE 2 SIMILAR BUT OPPOSITE)



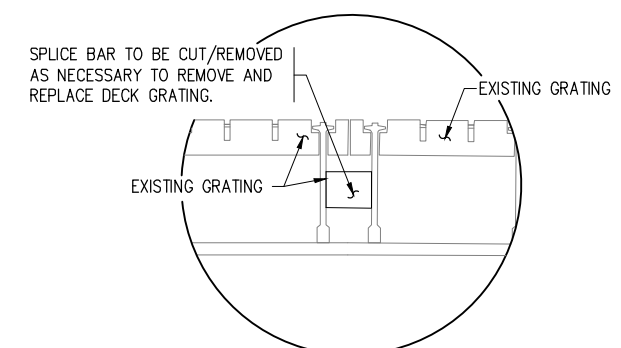
**DETAIL "A"**



**DETAIL "B"**



**DETAIL "C"**



**DETAIL "D"**

APPROXIMATE EXISTING DIMENSION FROM TOP OF FLOOR BEAM TO BOTTOM OF GRATING MAIN SUPPORT BEAM <sup>⑤</sup>			
LOCATION	DIM. A	DIM. B	DIM. C
NORTH END FLOORBEAM	5"	4 7/8"	4"
NORTH INTERMEDIATE FLOORBEAM	7 1/2"	7 1/4"	6"
SOUTH INTERMEDIATE FLOORBEAM	7"	6 1/2"	5 1/2"
SOUTH END FLOORBEAM	4 9/16"	4 9/16"	4"

**KEY NOTES:**

- ① WORK SHALL BE STAGED IN A MANNER AS TO MAINTAIN SINGLE LANE TRAFFIC. SEE TRAFFIC CONTROL PLANS FOR ADDITIONAL INFORMATION
- ② SEE SPECIAL PROVISIONS FOR DECK GRATING REQUIREMENTS.
- ③ UPON REMOVAL OF EXISTING GRATING, CLEAN ALL DEBRIS AND GRIND SMOOTH TOP OF 3" X 1/2" PLATE IN PREPARATION OF RECEIVING PROPOSED GRATING (INCIDENTAL).
- ④ PROVIDE SECONDARY SHIM PLATES AS NECESSARY TO PROVIDE POSITIVE BEARING OF GRATING SUPPORT BEAMS AND AS NECESSARY TO MAINTAIN EXISTING CROSS SLOPE. SECONDARY SHIMS SHALL BE A MINIMUM OF 1/8" THICK AND INCREASE AS NECESSARY BY 1/16" UP TO 3/4". IF A SECONDARY SHIM THICKER THAN 3/4" IS REQUIRED, PROVIDE TWO PLATES TO OBTAIN REQUIRED SHIM THICKNESS. WELD SECONDARY SHIM PLATE TO EXISTING SHIM PLATE WITH A 3/16" FILLET WELD AROUND ENTIRE PERIMETER OF SECONDARY SHIM PLATE.
- ⑤ DIMENSIONS ARE FOR INFORMATIONAL PURPOSES ONLY. DIMENSIONS ARE MEASURED FROM TOP OF FLOORBEAM ANGLES TO BOTTOM OF GRATING MAIN SUPPORT BEAM AT INTERMEDIATE FLOOR BEAM AND FROM TOP OF 12 3/8" X 1/2" PLATE AT END FLOORBEAMS. CONTRACTOR SHALL VERIFY AND REPORT DIMENSIONS PRIOR TO REMOVAL OF EXISTING GRATING. CONTRACTOR SHALL SHIM DECK GRATING AS REQUIRED TO MATCH IN PLACE BRIDGE CROSS SLOPES AND APPROACH ROADWAY ELEVATION.

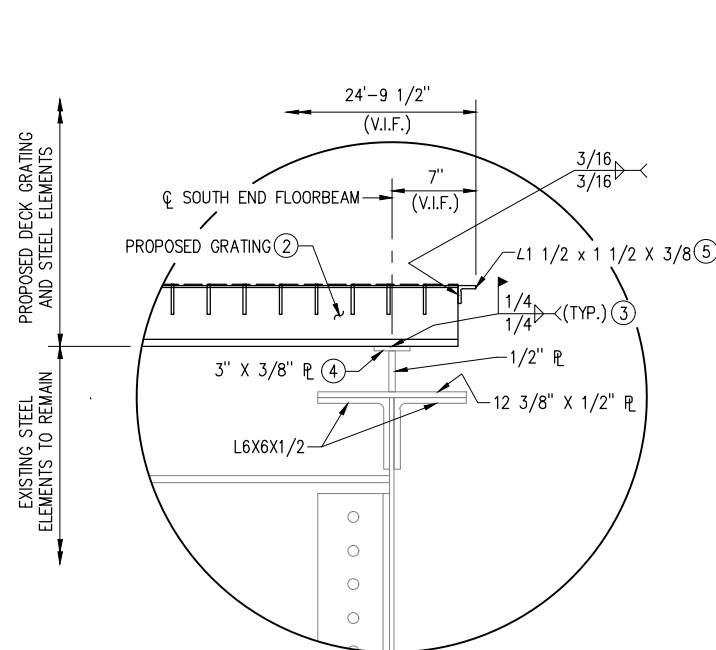
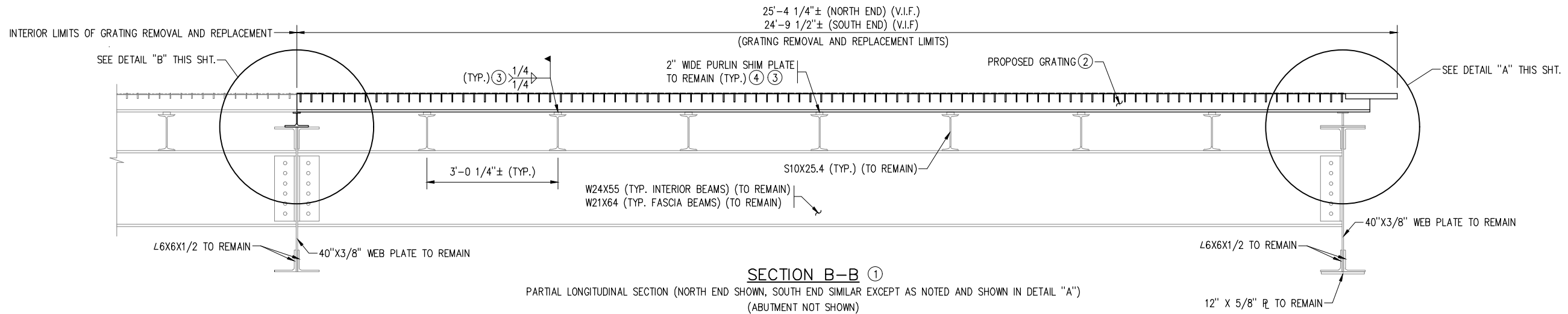
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NAME: Joseph D. Litman LIC. NO. 21833 DATE 08/14/2017  
JOSEPH D. LITMAN

TITLE:  
**GRATING REPLACEMENT TRANSVERSE SECTION**

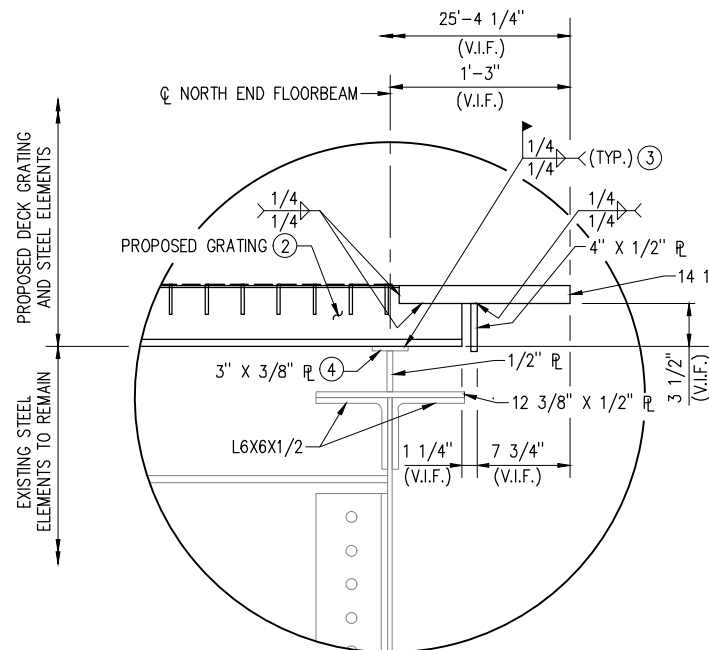
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**Sheet No. 5 of 10 Sheets**

**Bridge No.**  
**L6116**

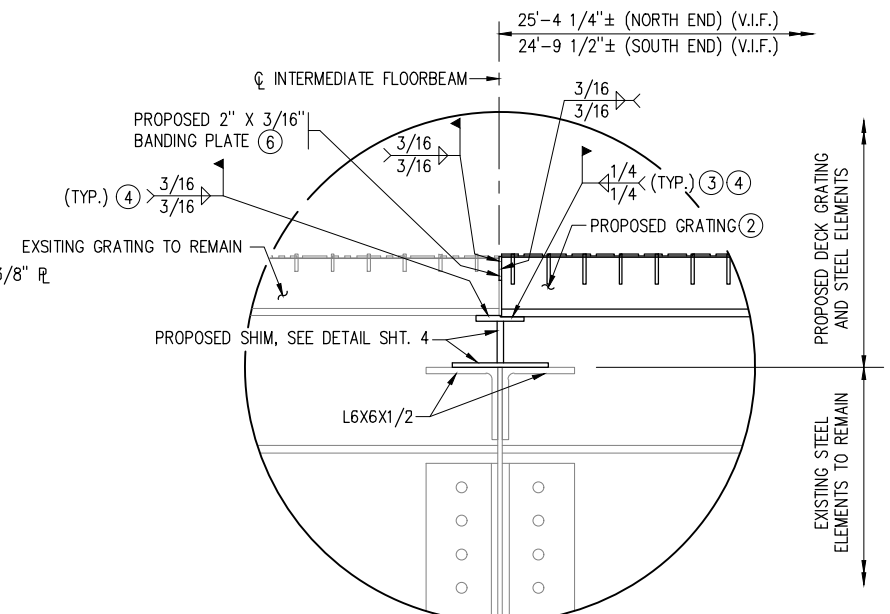
**State Aid Proj. No. 118-140-032**



DETAIL "A"  
SOUTH FLOORBEAM (FIXED END)



DETAIL "A"  
NORTH FLOORBEAM (EXPANSION END)



DETAIL "B"  
(TYPICAL INTERMEDIATE FLOORBEAM)

#### KEY NOTES:

- ① WORK SHALL BE STAGED IN A MANNER AS TO MAINTAIN SINGLE LANE TRAFFIC. SEE TRAFFIC CONTROL PLAN FOR ADDITIONAL INFORMATION
- ② SEE SPECIAL PROVISIONS FOR DECK GRATING REQUIREMENTS.
- ③ EXISTING DECK GRATING IS WELDED TO PURLIN AND FLOORBEAM SHIM PLATES EACH SIDE OF MAIN GRATING SUPPORT BAR. CUT/GRIND WELDS TO TOP OF EXISTING SHIM PLATE IN A MANNER AS TO NOT DAMAGE STEEL PURLIN OR SHIM. PRIOR TO PLACEMENT OF NEW DECK GRATING, CLEAN TOP OF SHIM OF ALL DEBRIS AND GRIND SURFACE SMOOTH AND CLEAN TO RECEIVE NEW DECK GRATING. CLEANING AND GRINDING OF SHIMS SHALL BE INCIDENTAL.
- ④ PROVIDE SECONDARY SHIM PLATES (ON TOP OF 3/8" & 1/2" PLATES) AS NECESSARY TO PROVIDE POSITIVE BEARING OF GRATING SUPPORT BEAMS AND AS NECESSARY TO MAINTAIN EXISTING CROSS SLOPE. SECONDARY SHIMS SHALL BE A MINIMUM OF 1/8" THICK AND INCREASE AS NECESSARY BY 1/16" UP TO 3/4". IF A SECONDARY SHIM THICKER THAN 3/4" IS REQUIRED, PROVIDE TWO PLATES TO OBTAIN REQUIRED SHIM THICKNESS. WELD SECONDARY SHIM PLATE TO EXISTING SHIM PLATE WITH A 3/16" FILLET WELD AROUND ENTIRE PERIMETER OF SECONDARY SHIM PLATE.
- ⑤ FIELD CUT EXISTING STEEL PLATE (NORTH END) AND ANGLE (SOUTH END) AS NECESSARY TO FACILITATE STAGED REMOVAL OF DECK GRATING. UPON INSTALLATION OF DECK GRATING, FIELD WELD STEEL PLATE JOINTS (NORTH END) AND ANGLE JOINTS (SOUTH END) TOGETHER WITH A BEVELED BUTT WELD. TOUCH UP GALVANIZING AT WELDING LOCATIONS. (INCIDENTAL)
- ⑥ REMOVE EXISTING GRATING BANDING PLATE DURING GRATING REMOVAL. PROVIDE 2" X 3/16" BANDING PLATE (FULL LENGTH THIS EDGE ON EACH GRATING PANEL) PREFABRICATED ON PROPOSED GRATING. BANDING PLATE SHALL BE GALVANIZED WITH GRATING PER MnDOT SPEC 3394.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT 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.  
NAME: Joseph D. Litman LIC. NO. 21833 DATE 08/14/2017  
JOSEPH D. LITMAN

TITLE:  
GRATING REPLACEMENT  
LONGITUDINAL SECTION

DES: CJM DR: CJM APPROVED:  
CHK: JDL CHK: JDL  
Sheet No. 6 of 10 Sheets

Bridge No.  
L6116

State Aid Proj. No. 118-140-032

TRAFFIC – BILL OF MATERIALS①				
THE FOLLOWING ITEMS ARE INCLUDED AND PAID FOR UNDER SPEC. 2563.601 TRAFFIC CONTROL				
SIGN NO.	DEVICE	SIZE ②	NO. REQ'D.	NOTES
R9-9		BLACK ON WHITE	2	
R10-6 (LEFT)		BLACK ON WHITE	2	
R11-X2		48"x24" BLK. ON WHITE	2	④
W3-3		36"x36" BLK., RED & GREEN ON YELLOW	2	③
W20-9		36"x36" BLK. ON ORANGE	2	
W20-4		36"x36" BLK. ON ORANGE	2	
TRAFFIC BARRIER		12'-6"	28	⑦
STEEL TRAFFIC BARRIER		27'-0"	2	⑤
TYPE A FLASHERS		YELLOW	6	
TYPE III BARRICADE		6' ORANGE & WHITE	2	
PLASTIC DRUM		WHITE ON ORANGE	15	⑥

KEY NOTES:

- ① POSTS, WEIGHTS AND HARDWARE REQUIRED FOR SIGN PLACEMENT ARE INCIDENTAL ITEMS.
- ② ALL SIGN PANEL DIMENSIONS ARE IN INCHES.
- ③ EXISTING TRAFFIC SIGNAL ON BRIDGE TO BE OPERATED BY CITY BRIDGE PERSONNEL.
- ④ ONE WITH LEFT ARROW AND ONE WITH RIGHT ARROW
- ⑤ SEE SHTS. 8 & 9 FOR DETAILS.
- ⑥ DRUM TO BE POSITIVELY ANCHORED/WIRED TO IN PLACE DECK GRATING.
- ⑦ PRECAST CONCRETE BARRIERS SHALL BE PINNED TOGETHER

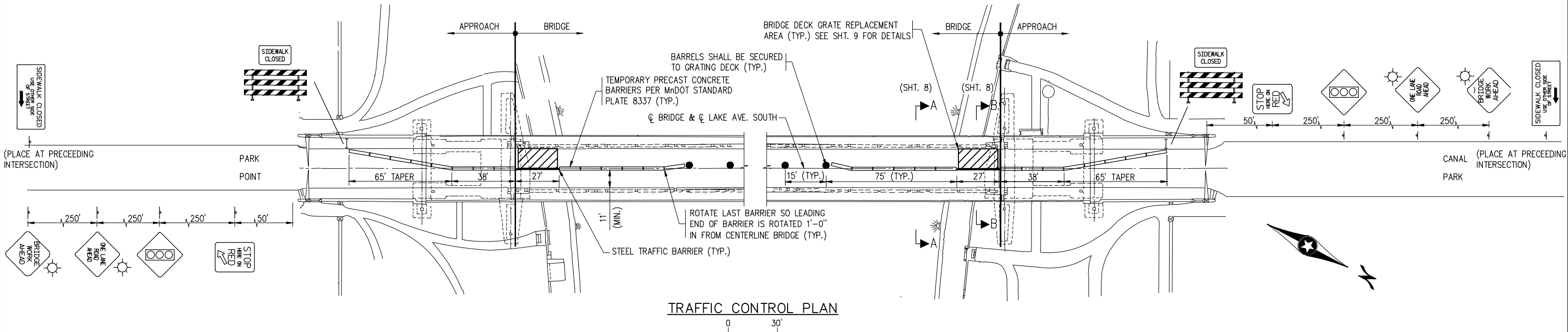
TRAFFIC CONTROL NOTES

- ① ALL SIGNING INDICATED ON THIS TRAFFIC CONTROL PLAN, EXCEPT THOSE SIGNS WHICH ARE INPLACE, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. ALL APPROPRIATE SIGNING, INCLUDING INPLACE SIGNS, SHALL BE MAINTAINED BY THE CONTRACTOR DURING THE LIFE OF THE CONTRACT.
- ② ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO, AND BE PLACED IN ACCORDANCE WITH, THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MMUTCD) INCLUDING PART VI AND THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS (CURRENT VERSION), THE MINNESOTA STANDARD SIGNS MANUALS PARTS I, II, AND III AND THE APPROPRIATE MATERIAL SPECIFICATIONS.
- ③ THE CONTRACTOR SHALL RECEIVE COMPENSATION FOR ALL WORK DESCRIBED HEREIN ON THE BASIS OF A LUMP SUM PAYMENT FOR ITEM "TRAFFIC CONTROL".
- ④ THE CONTRACTOR SHALL PLACE ADEQUATE PRECAST BARRIERS, WARNING SIGNS, AND BARRICADES WITHIN THE CONSTRUCTION ZONE TO PROTECT VEHICULAR TRAFFIC AND PEDESTRIAN TRAFFIC FROM CONSTRUCTION OPERATIONS. ADDITIONAL SIGNING MAY INCLUDE, BUT IS NOT LIMITED TO BUMP, DIP, SIDEWALK CLOSED, ETC. THE NUMBER AND PLACEMENT OF TRAFFIC CONTROL DEVICES SHALL BE DETERMINED BY THE SEQUENCE OF THE CONTRACTORS OPERATIONS. TRAFFIC CONTROL DEVICES MAY BE ADJUSTED IN THE FIELD AS DIRECTED BY THE ENGINEER.
- ⑤ ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED OR COVERED AS SOON AS THEY ARE NO LONGER REQUIRED OR APPROPRIATE.
- ⑥ THE INITIAL CONSTRUCTION SIGNING (BRIDGE WORK AHEAD) SHALL BE ERECTED PRIOR TO ANY CONSTRUCTION OPERATIONS.
- ⑦ TYPE A (LOW INTENSITY) FLASHERS SHALL BE FURNISHED, INSTALLED, AND MAINTAINED ON TYPE III BARRICADES AND ADVANCED WARNING SIGNS WHEN USED AT NIGHT, OR TO IDENTIFY HAZARDS, AND AS DETAILED IN THIS TRAFFIC CONTROL PLAN. ADDITIONAL FLASHERS SHALL BE FURNISHED, INSTALLED, AND MAINTAINED ON SIGNS, AND BARRICADES AS NEEDED OR AS DIRECTED BY THE ENGINEER FOR TRAFFIC CONTROL THROUGH WORK ZONES WITHIN THE PROJECT LIMITS.

TRAFFIC CONTROL NOTES – CONT...

- ⑧ FLAGGING SHALL BE REQUIRED WHEN WORK IS AT THE EDGE OF THE DRIVING LANE, TRAFFIC IS TEMPORARILY STOPPED AND AS NEEDED TO MAINTAIN VEHICLE AND WORKER SAFETY. FLAGGING SHALL BE IN ACCORDANCE WITH THE PERTINENT LAYOUTS SHOWN IN PART VI OF THE MMUTCD, INCLUDING THE FIELD MANUAL (LATEST EDITION). ALL SUCH WORK RELATED TO FLAGGING, INCLUDING FLAG PERSONS, SHALL BE CONSTRUED TO BE INCLUDED IN THE LUMP SUM PAYMENT FOR "TRAFFIC CONTROL".
- ④① TRAFFIC CONTROL LAYOUT AS SHOWN IS TO FACILITATE A LANE CLOSURE ON THE WEST SIDE OF STRUCTURE. TRAFFIC CONTROL FOR OTHER WORK TYPES/PHASES SHALL BE SIMILARLY DETAILED BY CONTRACTOR AND PROPOSED IN ADVANCE. NO ADDITIONAL COMPENSATION OR PAYMENT BEYOND SINGLE PAYMENT FOR ITEM "TRAFFIC CONTROL" WILL BE MADE FOR REMOVING AND RESETTNG ANY TRAFFIC CONTROL SIGNS/DEVICES OR FOR FURNISHING AND PLACING ADDITIONAL SIGNS/DEVICES.

LEGEND	
	SIGN
	TRAFFIC BARRIER
	BARRICADE



TRAFFIC CONTROL PLAN

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NAME: Joseph D. Litman LIC. NO. 21833 DATE 08/14/2017

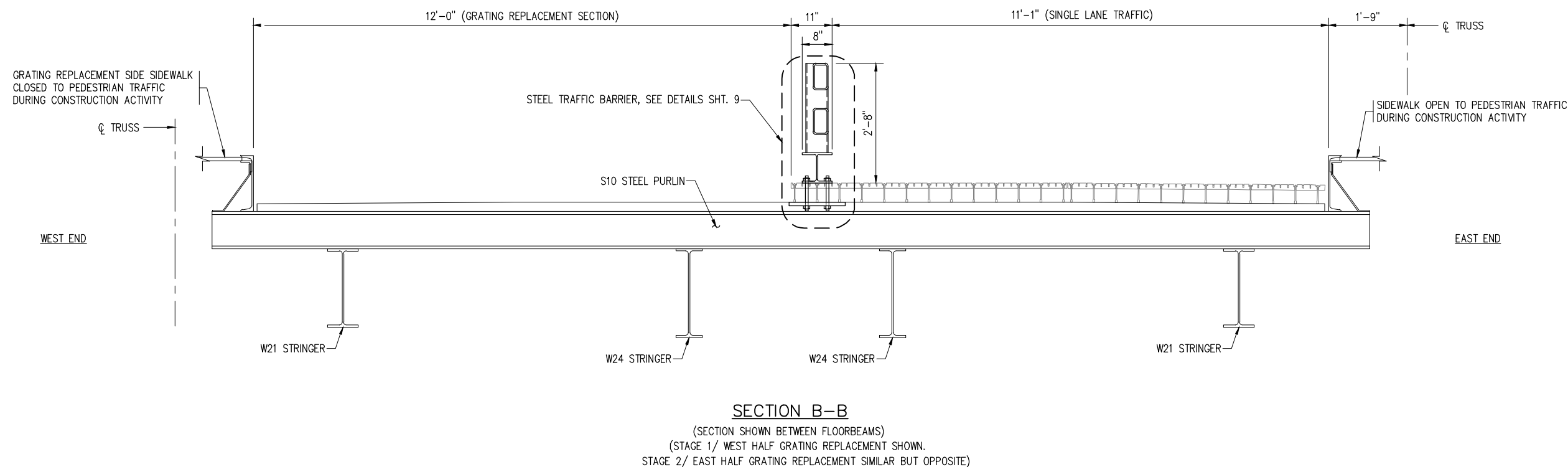
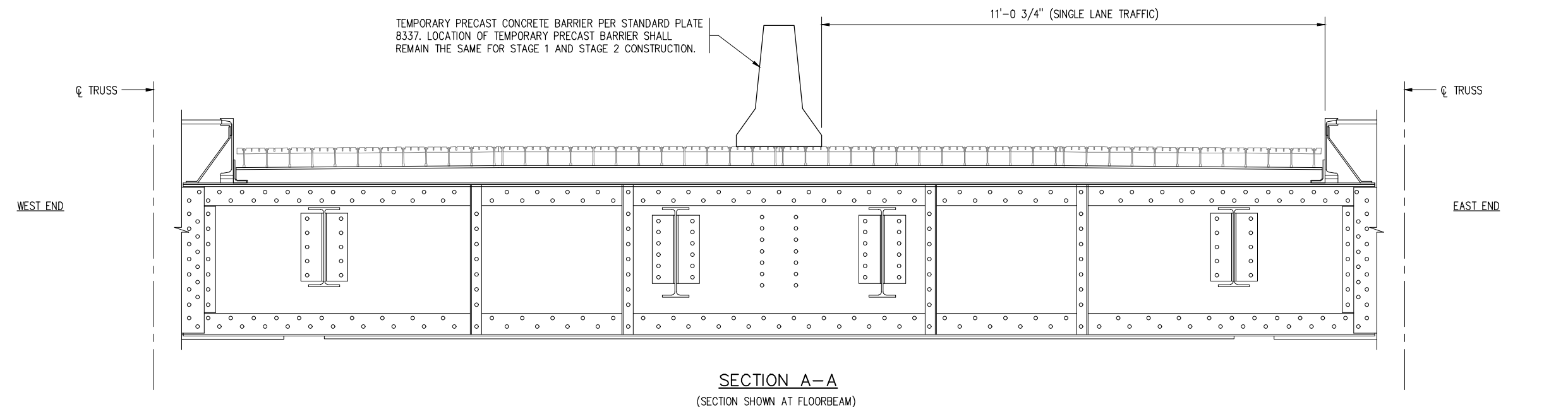
JOSEPH D. LITMAN

TITLE: TRAFFIC CONTROL

DES: CJM DR: CJM APPROVED: [Signature]  
CHK: JDL CHK: JDL  
Sheet No. 7 of 10 Sheets

Bridge No. L6116

State Aid Proj. No. 118-140-032



State Aid Proj. No. 118-140-032

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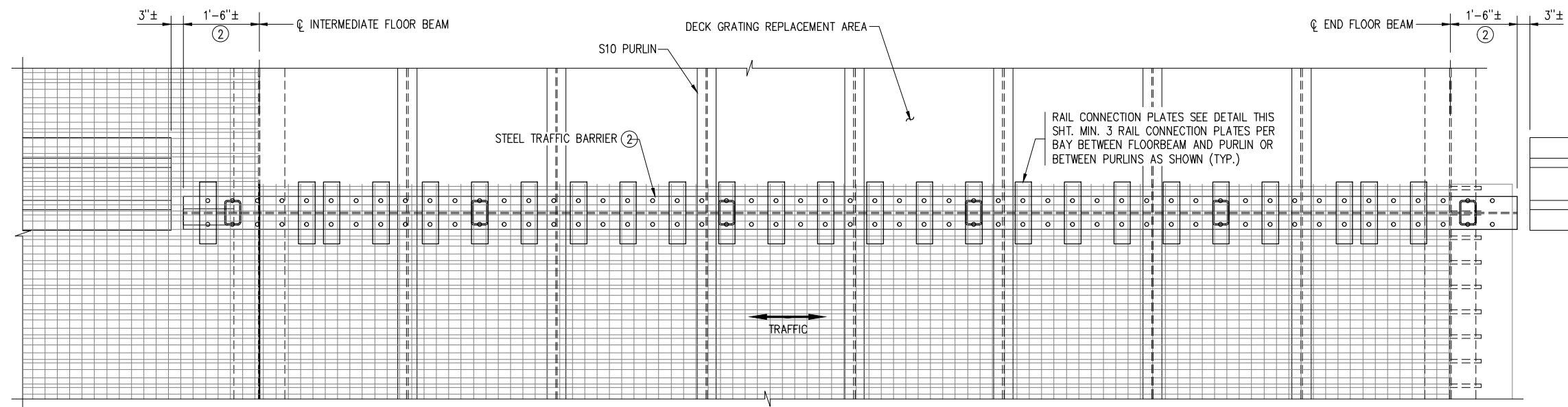
JOSEPH D. LITMAN

TITLE: TRAFFIC CONTROL SECTION

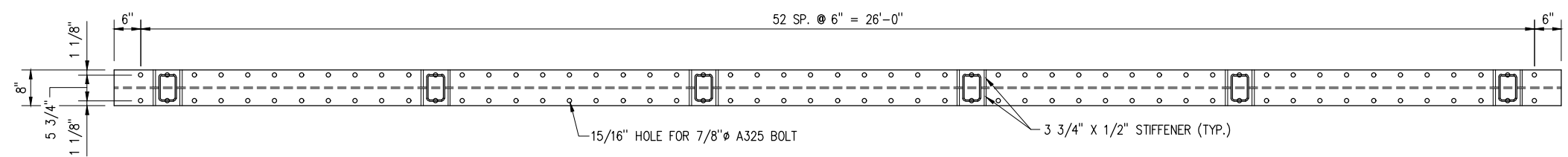
DES: CJM	DR: CJM	APPROVED:
CHK: JDL	CHK: JDL	
Sheet No. 8 of 10 Sheets		

Bridge No. L6116

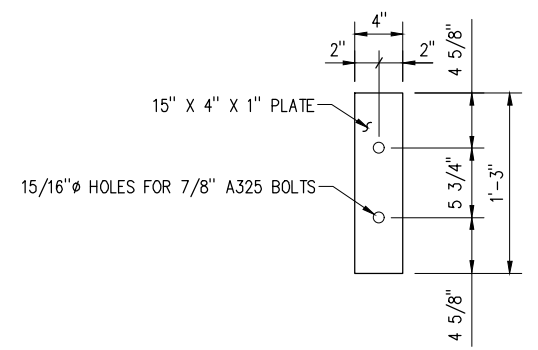




TRAFFIC CONTROL PLAN ②  
(ABUTMENT AND HORIZONTAL RAIL TUBES NOT SHOWN FOR CLARITY)



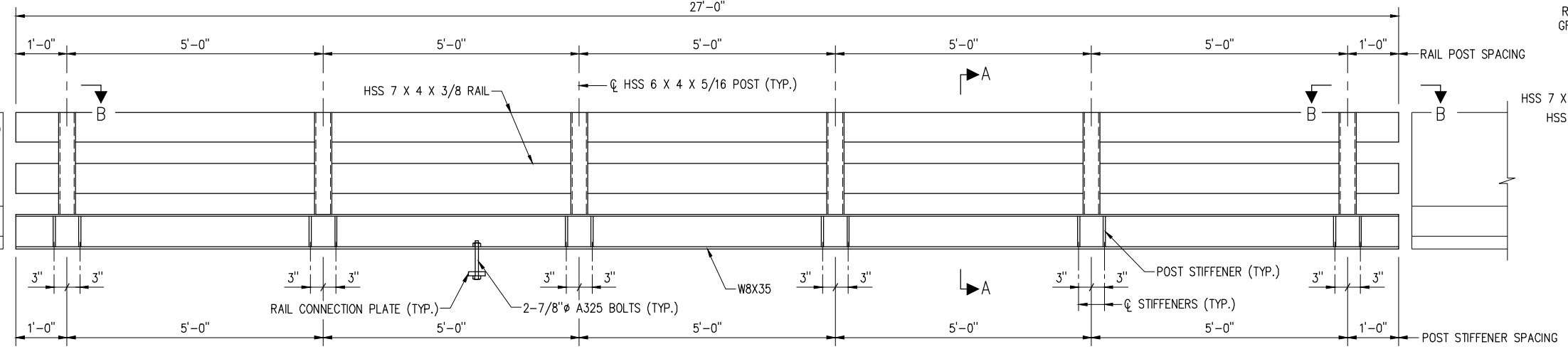
STEEL TRAFFIC BARRIER PLAN ② ③ ④  
(2 THUS REQUIRED)  
(HORIZONTAL RAIL TUBES NOT SHOWN FOR CLARITY)



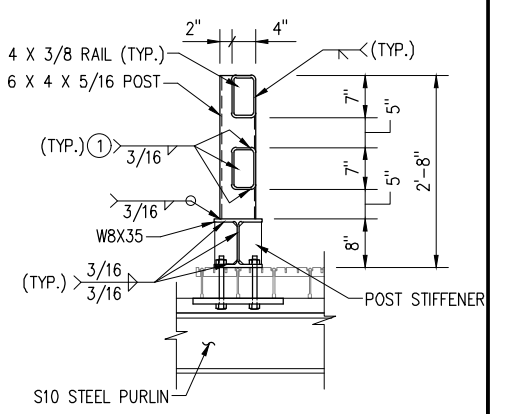
RAIL CONNECTION PLATE

RAIL CONNECTION PLATE SHALL BE CONNECTED TO W8X35 RAIL BEAM WITH 2-7/8" A325 BOLTS. BOLTS, WASHERS AND NUTS SHALL MEET MNDOT SPEC 3391.2.B. POSITION RAIL CONNECTION PLATE TO POSITIVELY ENGAGE 3 OF THE GRATING MAIN SUPPORT BEAMS AS SHOWN IN SECTION A-A

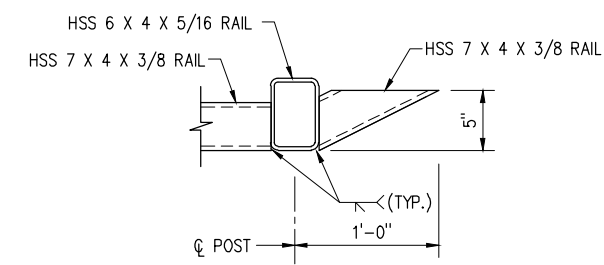
TEMPORARY PRECAST CONC. BARRIER PER MNDOT STD. PLATE 8337 (TYP.)  
(SIM. BUT OPPOSITE)



STEEL TRAFFIC BARRIER ELEVATION ② ④  
(2 THUS REQUIRED)  
(GRATING NOT SHOWN FOR CLARITY)



SECTION A-A



SECTION B-B

(KINK RAIL TUBES AS SHOWN, BOTH RAILS, BOTH ENDS)

NOTES:

- W8X35 SHALL MEET REQUIREMENTS OF MNDOT SPEC. 3310
- STEEL PLATES SHALL MEET REQUIREMENT OF MNDOT SPEC. 3309.
- HSS STEEL RAIL AND POSTS SHALL MEET REQUIREMENTS OF MNDOT SPEC 3361.2.A
- WELDING SHALL BE DONE IN ACCORDANCE WITH MNDOT SPEC 2471 AND SHALL UTILIZE E70XX ELECTRODES.
- BOLTS, WASHER AND NUTS SHALL MEET THE REQUIREMENTS OF MNDOT SPEC 3391.2.B

KEY NOTES:

- ① OMIT TOP WELD ON TOP STEEL RAIL
- ② ADJUST LOCATION LONGITUDINALLY OF STEEL TRAFFIC BARRIER AS NEEDED TO ALLOW FOR PROPER CONNECTION OF BARRIER TO DECK GRATING AS DETAILED.
- ③ 4" TRANSVERSE BAR SPACING IN NEW GRATING WILL REQUIRE FIELD DRILLING NEW HOLES IN W8X35 RAIL BASE BEAM AT ESTIMATED 14 LOCATIONS PER BEAM TO FACILITATE ANCHORING OF BEAM DURING STAGE 2 WORK (INCIDENTAL)
- ④ STEEL TRAFFIC BARRIER TO BE INCLUDED FOR PAYMENT IN ITEM "TRAFFIC CONTROL"

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NAME: Joseph D. Litman LIC. NO. 21833 DATE 08/14/2017  
JOSEPH D. LITMAN

TITLE:  
TRAFFIC CONTROL DETAILS

DES: CJM DR: CJM APPROVED:  
CHK: JDL CHK: JDL  
Sheet No. 9 of 10 Sheets

Bridge No.  
L6116

State Aid Proj. No. 118-140-032

WEARING COURSE

☐ LOW SLUMP

☐ OTHER

TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER

MANUFACTURER'S IDENTIFICATION

GLAND MANUFACTURER

SIZE OF GLAND

MANUFACTURER'S IDENTIFICATION

ELASTOMERIC BEARING PADS

PAD MANUFACTURER

SPECIAL SURFACE FINISH

PRODUCT NAME:

COLOR & TEXTURE:

FINISHING ROADWAY FACES OF BARRIER OR PARAPET

PRODUCT NAME:

COLOR & TEXTURE:

ANTI-GRAFFITI COATING

MANUFACTURER

PRODUCT NAME:

PAINT SYSTEM

MnDOT SPECIFICATION NUMBER

MANUFACTURER

PRIME COAT

INTERMEDIATE COAT

FINISH COAT

PLAN QUALITY

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION.

BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS.

SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD.

COMMENTS:

NUMBER OF BRIDGE SUPPLEMENTAL AGREEMENTS:

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

NOTIFICATION TO ADD, REMOVE, OR REHAB A STRUCTURE

PLEASE GO TO THE FOLLOWING WEBSITE AND COMPLETE THE FORM WHEN ADDING, REMOVING OR REHABILITATING A STRUCTURE:

CHANGE OF VERTICAL CLEARANCE

PLEASE GO TO THE FOLLOWING WEBSITE WHEN CHANGING THE VERTICAL CLEARANCE OF EXISTING BRIDGE STRUCTURE:

THIS FORM IS AVAILABLE IN AN ELECTRONIC FORMAT AT:

OTHER ITEMS

UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES:

REMOVE & PATCH QUANTITIES (SF)						CONCRETE SURFACE REPAIR (SF)	CLEAN & PAINT REINF. (SF)
TYPE A:	TYPE B:	TYPE C:	TYPE D:	TYPE E:	TYPE F:		

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

REVISION:

APPROVED:

STATE BRIDGE ENGINEER

AS-BUILT DETAILS

(AS NEEDED)

State Aid Proj. No. 118-140-032

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NAME:

LIC. NO.

DATE

JOSEPH D. LITMAN

TITLE:

AS-BUILT BRIDGE DATA

DES:

CHK:

DR:

CHK:

APPROVED:

FIG. 5-397.900

Bridge No. L6116

Sheet No. 10 of 10 Sheets