

PLAN LEGEND

RIGHT OF WAY LINE	---
DITCH CENTERLINE	---
FENCE LINE	---
RETAINING WALL	---
GRAVEL LINE	---
GUARD RAIL LINE	---
RAILROAD TRACK LINE	---
ROAD CENTERLINE	---
TREE LINE	---
STREAM LINE	---
WETLAND LINE	---
EX SANITARY LINE	---
PR SANITARY LINE	---
AB SANITARY LINE	---
EX FORCEMAIN LINE	---
PR FORCEMAIN LINE	---
AB FORCEMAIN LINE	---
EX STORM LINE	---
PR STORM LINE	---
AB STORM LINE	---
EX WATER LINE	---
PR WATER LINE	---
AB WATER LINE	---
EX GAS LINE	---
PR GAS LINE	---
AB GAS LINE	---
EX STEAM LINE	---
PR STEAM LINE	---
AB STEAM LINE	---
UG CABLE TV LINE	---
AB CABLE TV LINE	---
UG ELECTRIC LINE	---
AB ELECTRIC LINE	---
UG FIBEROPTIC LINE	---
AB FIBEROPTIC LINE	---
UG TELEPHONE LINE	---
AB TELEPHONE LINE	---
OH ELECTRIC LINE	---
OH TELEPHONE LINE	---
OH CABLE TV LINE	---

SYMBOLS

EX SANITARY MANHOLE	(SAN)
EX SANITARY CLEANOUT	(STPM)
EX STORM MANHOLE	(W)
EX STORM CATCHBASIN	(WV)
EX. WATER MANHOLE	(W)
EX. WATER VALVE	(WV)
EX. WATER HYDRANT	(WV)
EX. WATER SHUTOFF	(WV)
EX. WATER & GAS MH	(W&G)
EX. GAS MANHOLE	(GAS)
EX. GAS VALVE	(GV)
EX. GAS SHUTOFF	(GV)
EX. STEAM MANHOLE	(STEAM)
EX. TELEPHONE MANHOLE	(T)
EX. ELECTRIC MANHOLE	(E)
EX. POWERPOLE	(P)
EX. LIGHT POLE	(L)
EX. ELECTRIC VAULT	(EV)
EX. ANCHOR	(A)
EX. ELECTRIC TRANSFORMER	(ET)
EX. STREET LIGHT	(SL)
EX. SIGNAL W/ STREET LIGHT	(H.H.)
EX. HANDHOLE	(H.H.)
EX. HANDHOLE	(H.H.)
EX. TELEPHONE PEDESTAL	(P)
EX. WELL	(W)
BENCHMARK	(B)
FOUND CI MONUMENT	(M)
EX. SIGN	(S)
CONTROL POINT	(CP)
EX DECIDUOUS TREE	(DT)
EX CONIFEROUS TREE	(CT)
EX. PARKING METER	(PM)
EX. SOIL BORING	(SB#)



CITY OF DULUTH

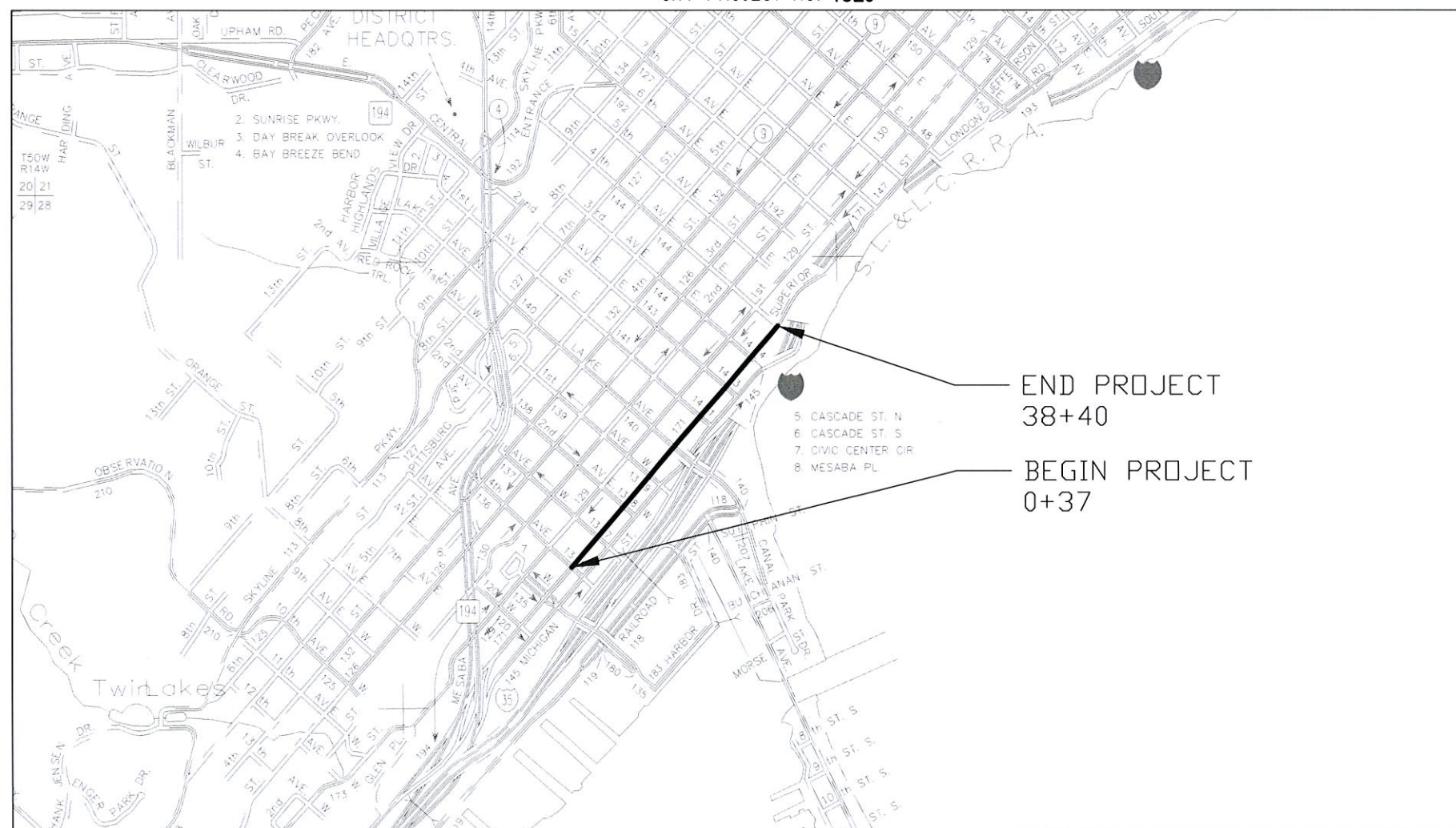
DEPARTMENT OF PUBLIC WORKS AND UTILITIES

ENGINEERING DIVISION

CONSTRUCTION PLANS FOR:

SUPERIOR STREET SANITARY SEWER CIPP LINING
4TH AVENUE WEST TO 4TH AVENUE EAST

CITY PROJECT NO. 1529



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/index.html>

THE 2016 EDITION OF THE CITY OF DULUTH PUBLIC WORKS AND UTILITIES
DEPARTMENT CONSTRUCTION STANDARDS AND SUPPLEMENTS OR ADDENDUMS SHALL
APPLY.

AVAILABLE AT:

<http://www.duluthmn.gov/engineering/standard-construction-specifications/>

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D.
THIS 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".

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

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	DETAILS
4-13	PLAN & PROFILES

THIS PLAN CONTAINS 13 SHEETS

I HEREBY CERTIFY THAT THIS PLAN 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.

ERIC SHAFFER

PROJECT ENGINEER (TYPED OR PRINTED NAME)

PROJECT ENGINEER 5/24/16 25374
DATE LIC. NO.

CITY APPROVAL

APPROVED 5/24/16
CHIEF ENGINEER OF TRANSPORTATION DATE

APPROVED 5/24/16
CHIEF ENGINEER OF UTILITIES DATE

APPROVED 5/24/16
CITY ENGINEER DATE

SCHEDULE OF ESTIMATED QUANTITIES

NOTES	ITEM NUMBER	SPEC. NUMBER	DESCRIPTION	UNIT	TOTAL EST. QUANTITY	C.O.D. QUANTITY	W.L.S.S.D. QUANTITY
	1	2021.501	Mobilization	LUMP SUM	1	1	
	2	2503.511	Connect Sewer Service	EACH	2	2	
	3	2503.600	Sanitary Sewer Pipe Cleaning	HOURS	180	180	
1,5	4	2503.600	Bypass Pumping	HOURS	464	264	200
	5	2503.602	Determine Active Services	EACH	46	46	
2	6	2503.602	Spot Repair	EACH	4	4	
3,5	7	2503.602	Individual Building Sewer Service Bypass Pumping	EACH	12	12	
	8	2503.602	Remote Cut and Reconnect Service	EACH	46	46	
4,5,6	9	2503.603	24" CIPP Main Lining	LF	100		100
4,5,6	10	2503.603	36" CIPP Main Lining	LF	1036		1036
5,6	11	2503.603	1'-6" X 2'-3" Inverted Brick Arch	LF	464	464	
5,6	12	2503.603	1'-9" X 2'-8" Inverted Brick Arch	LF	1872	1872	
5,6	13	2503.603	1'-10" X 2'-9" Inverted Brick Arch	LF	1370	1370	
5,6	14	2503.603	2'-0" X 3'-0" Inverted Brick Arch	LF	165	165	
5,7	15	2563.601	Traffic Control	LUMP SUM	1	1	
	16		Grouting Pointed End Of Brick Arch Pipe Allowance	LUMP SUM	1	1	

NOTES:

- 1) Estimated sanitary flows can be found in Appendix A of Special Provisions. No bypass pumping will be allowed during rain events.
- 2) Includes all materials and labor to repair sewer pipe to a linable condition in a manor acceptable to the engineer and all surface restoration. Includes but is not limited to excavation, fittings & adaptors, concrete & brick, imported granular backfill, compaction, disposal of excavated waste material, and pavement, curb & sidewalk restoration.
- 3) Historic water use can be found in Appendix B of Special Provisions.
- 4) The City and/or WLSSD reserve the right to delete this work from the contract.
- 5) Work will be performed during off-peak hours from 7:00 pm to 7:00 am.
- 6) A hot water cure shall be used.
- 7) Unless otherwise approved by the Engineer, the Contractor shall maintain two-way traffic with at least one lane open in each direction at all times.

TABLE OF PIPES

PIPE ID	UPSTREAM MANHOLE I.D.	DOWNSTREAM MANHOLE I.D.	PLAN PAGE NUMBER	PIPE LENGTH	PIPE DIAMETER	PIPE HEIGHT	PIPE WIDTH	PIPE SHAPE	PIPE MATERIAL	ANITICIPATED NUMBER OF ACTIVE CONNECTIONS	NOTES	LOCATION	FROM STREET	TO STREET	YEAR INSTALLED	OWNER
SL0410072	SA0410081	SA0410079	4	464		27	18	Egg	BRICK	12		W Superior St	4th Ave W	3rd Ave W	1886	CITY OF DULUTH
SL0410074	SA0410079	SA0410078	5	466		32	21	Egg	BRICK	5		W Superior St	3rd Ave W	2nd Ave W	1886	CITY OF DULUTH
SL0410075	SA0410078	SA0410077	6	468		32	21	Egg	BRICK	8		W Superior St	N 2nd Ave W	N 1st Ave W	1886	CITY OF DULUTH
SL0410077	SA0410077	SA0410076	7	467		32	21	Egg	BRICK	10		W Superior St	N 1st Ave W	N Lake Ave	1886	CITY OF DULUTH
SL0410078	SA0410076	SA0410075	8	440		32	21	Egg	BRICK	1		W Superior St	N Lake Ave	N 1st Ave E	1886	CITY OF DULUTH
SL0410079	SA0410075	SA0410073	8	31		32	21	Egg	BRICK	0	Main Sweeps	E Superior St	N Lake Ave	N Lake Ave	1886	CITY OF DULUTH
SL0410080	SA0410073	SA0410081	9	165		36	24	Egg	BRICK	0		S 1st Ave East	E Superior St	E Michigan St	1886	CITY OF DULUTH
SL0410068	SA0410074	SA0410073	10	31		33	22	Egg	BRICK	0	Main Sweeps	E Superior St	N Lake Ave	N Lake Ave	1886	CITY OF DULUTH
SL0410067	SA0410020	SA0410074	10	428		33	22	Egg	BRICK	4		E Superior St	N 1st Ave E	N 2nd Ave E	1886	CITY OF DULUTH
SL0410020	SA0410018	SA0410019	11	467		33	22	Egg	BRICK	2		E Superior St	N 2nd Ave E	3rd Ave E	1886	CITY OF DULUTH
SL0410019	SA0410014	SA0410018	12,13	444		33	22	Egg	BRICK	4		E Superior St	3rd Ave E	4th Ave E	1886	CITY OF DULUTH
WL0460001	SA0410009	DS0410001	11,12,13	25	36			Circular	RCP	0		4th Ave E	E Superior St	E 1st St Alley	1939	WLSSD
WL0410008	SW0410008	SA0410009	11,12,13	58	36			Circular	RCP	0		4th Ave E	E Superior St	E 1st St Alley	1939	WLSSD
SL0410016	SA0410011	SA0410010	12,13	412	36			Circular	RCP	0		E Superior St	3rd Ave E	4TH AVE E	1939	WLSSD
WL0410007	SW0410007	SW0410008	12,13	447	36			Circular	RCP	0		E Superior St	3rd Ave E	4th Ave E	Unknown	WLSSD
SL0410015	SA0410012	SA0410011	12,13	22	36			Circular	RCP	0		E Superior St	4th Ave E	4th Ave E	1939	WLSSD
WL0410006	SW0410006	SW0410007	12,13	72	36			Circular	RCP	0		E Superior St	4th Ave E	4th Ave E	11689	WLSSD
SL0410014	SA0410013	SA0410012	12,13	50	24			Circular	RCP	0		E Superior St	4th Ave E	4th Ave E	1993	WLSSD
SL0410013	SW0410006	SA0410013	12,13	50	24			Circular	RCP	0		E Superior St	4th Ave E	4th Ave E	31413	WLSSD
TOTALS				5007						46						

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SIGNATURE: 

ERIC SHAFFER
TYPE NAME

DATE: 4/1/2016

LIC. NO: 25374



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

SUPERIOR STREET SANITARY SEWER LINING

CITY PROJECT NO.: 1529

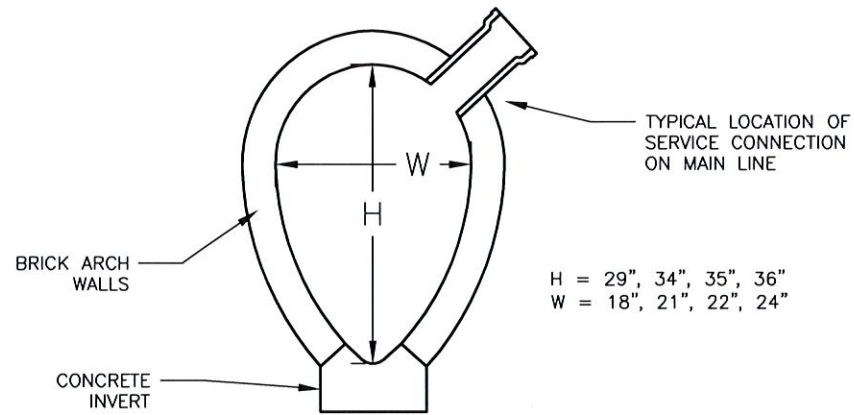
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DRAWN BY: JJM

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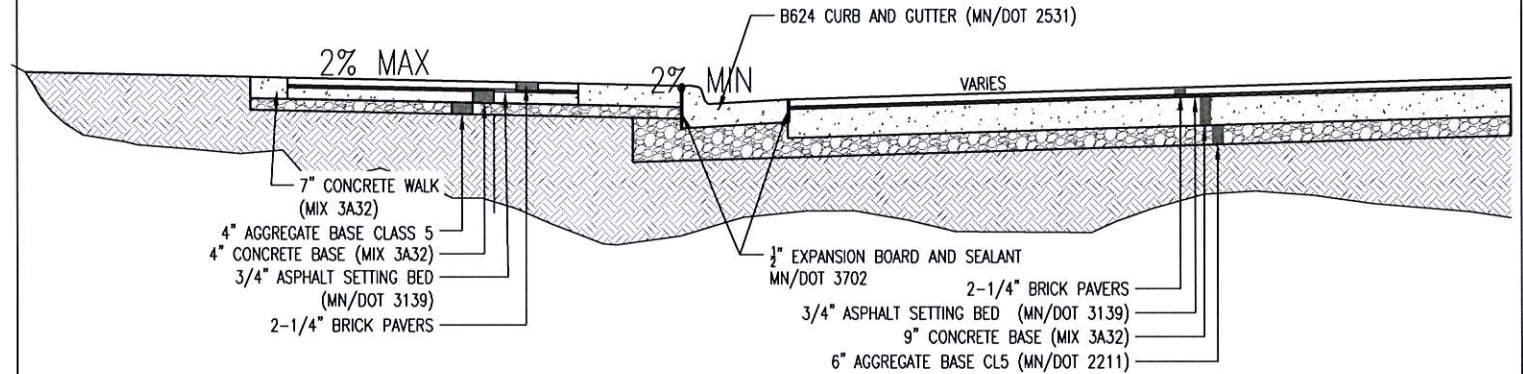
SHEET NO. 2 OF 13

I:\PWU\ENGINEER\PROJECTS\2016\1529-Superior-St.-CIPP\DWG\1529_SEQ & DETAILS.dwg



H = 29", 34", 35", 36"
W = 18", 21", 22", 24"

INVERTED BRICK ARCH
TYPICAL CROSS SECTION



NOTES:

1. REFER TO 2388 BRICK PAVEMENT RESTORATION IN THE CITY OF DULUTH CONSTRUCTION STANDARDS
2. DRILL AND GROUT 1" DIA. DOWEL BARS (24" LENGTH) 16" O.C. INTO ADJACENT EXISTING CONCRETE BASE
3. ASPHALT SETTING BED MATERIALS SHALL MEET GRADATION "D" OF TABLE 3139-2 OF MN/DOT 3139
4. CONCRETE (MIX 3A32) SHALL MEET THE PROVISIONS OF MN/DOT 2301 AND MN/DOT 2461
5. BRICK PAVERS (4" X 8" X 2-1/4") SHALL MEET ASTM C902-79A, EXCEPT AS MODIFIED IN THE CITY OF DULUTH CONSTRUCTION STANDARDS. BRICK COLOR AND TEXTURE SHALL MATCH EXISTING OR AS APPROVED BY ENGINEER.

BRICK PAVEMENT RESTORATION

STR-9

APPROVED 02/19/2015

CITY OF DULUTH STANDARD DETAIL
DEPT. OF PUBLIC WORKS AND UTILITIES

NO SCALE

I HEREBY CERTIFY THAT THIS PLAN 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.

SIGNATURE:

ERIC SHAFFER
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ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

SUPERIOR STREET SANITARY SEWER LINING

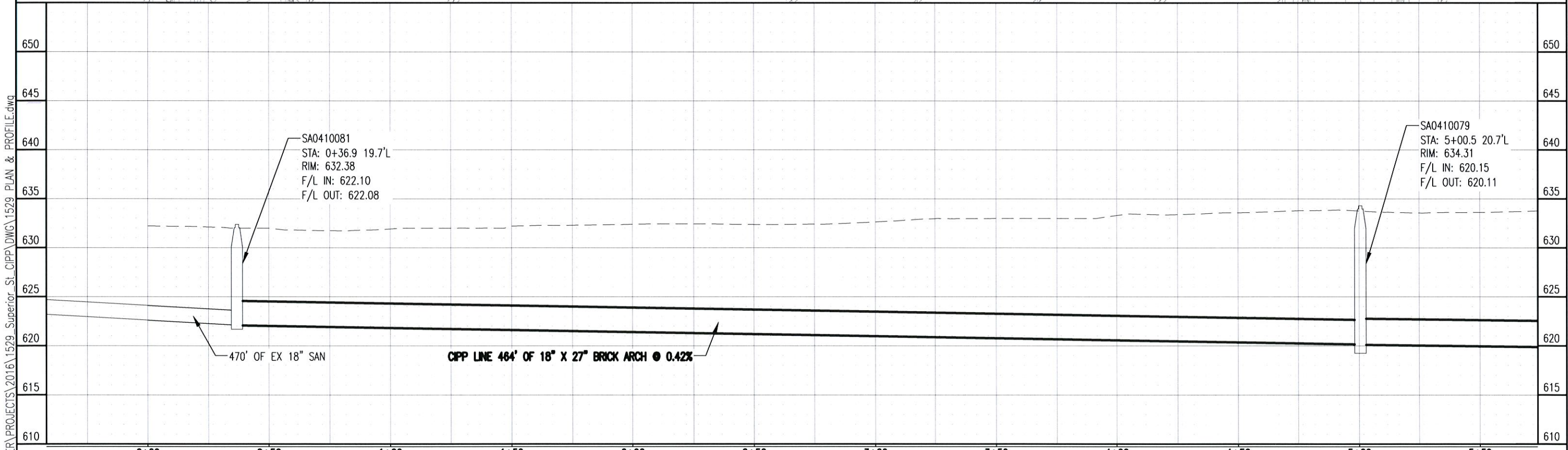
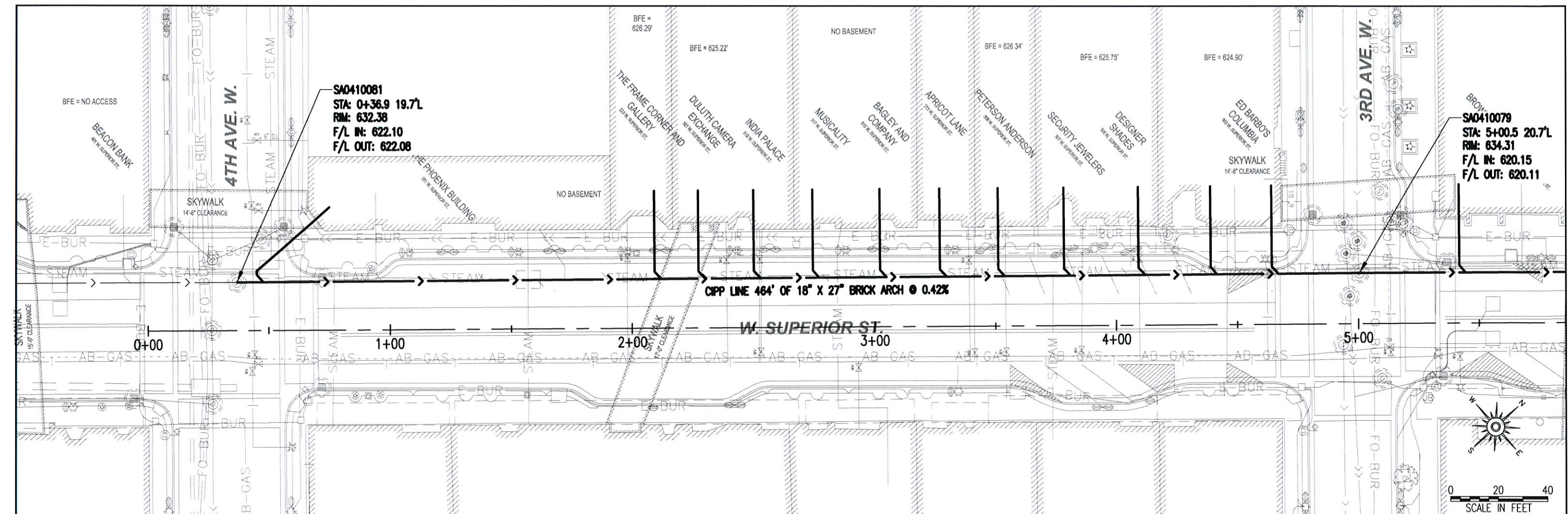
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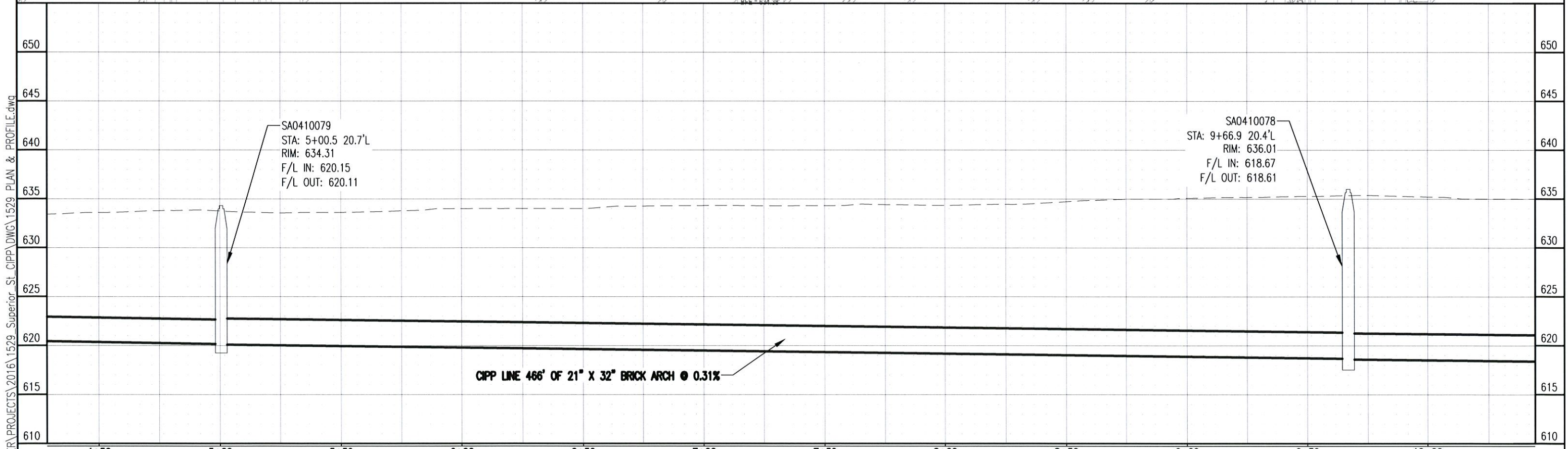
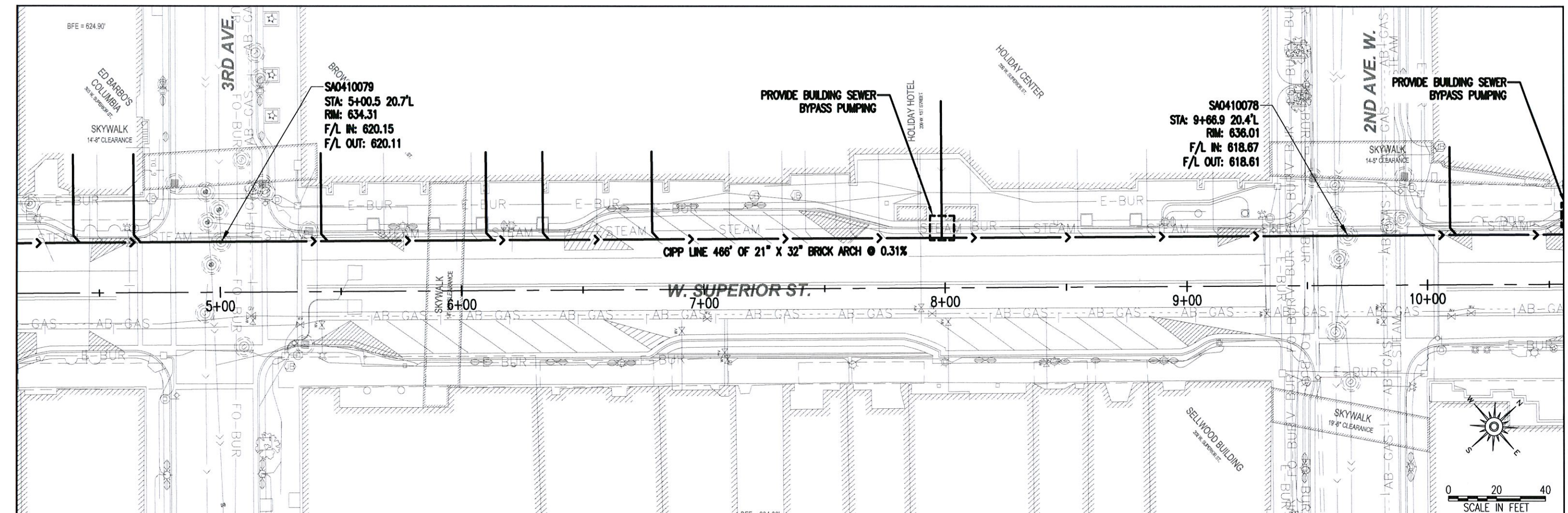
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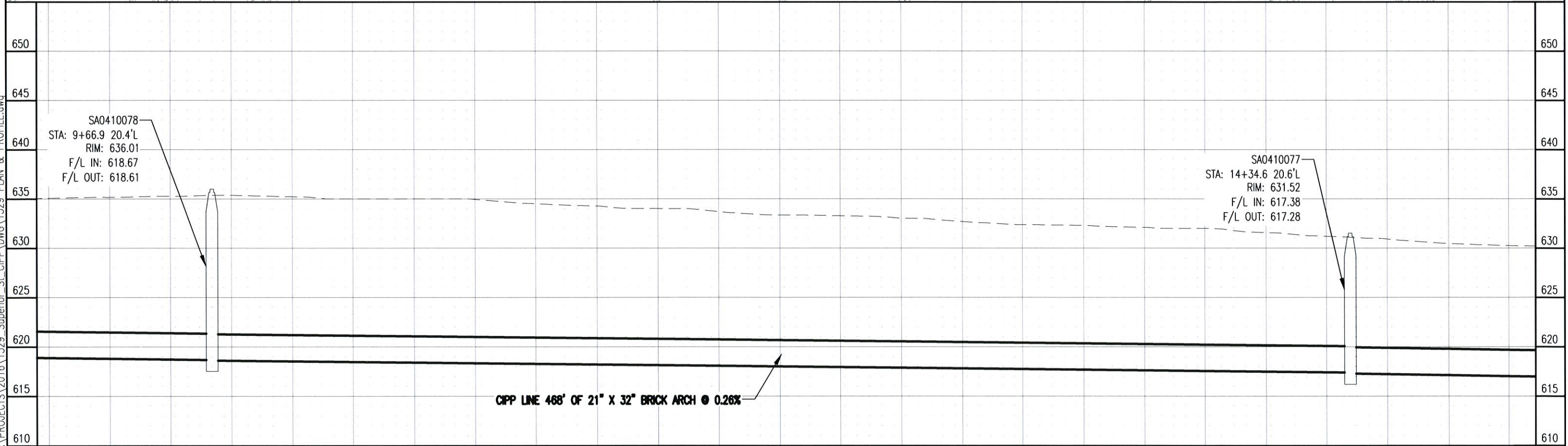
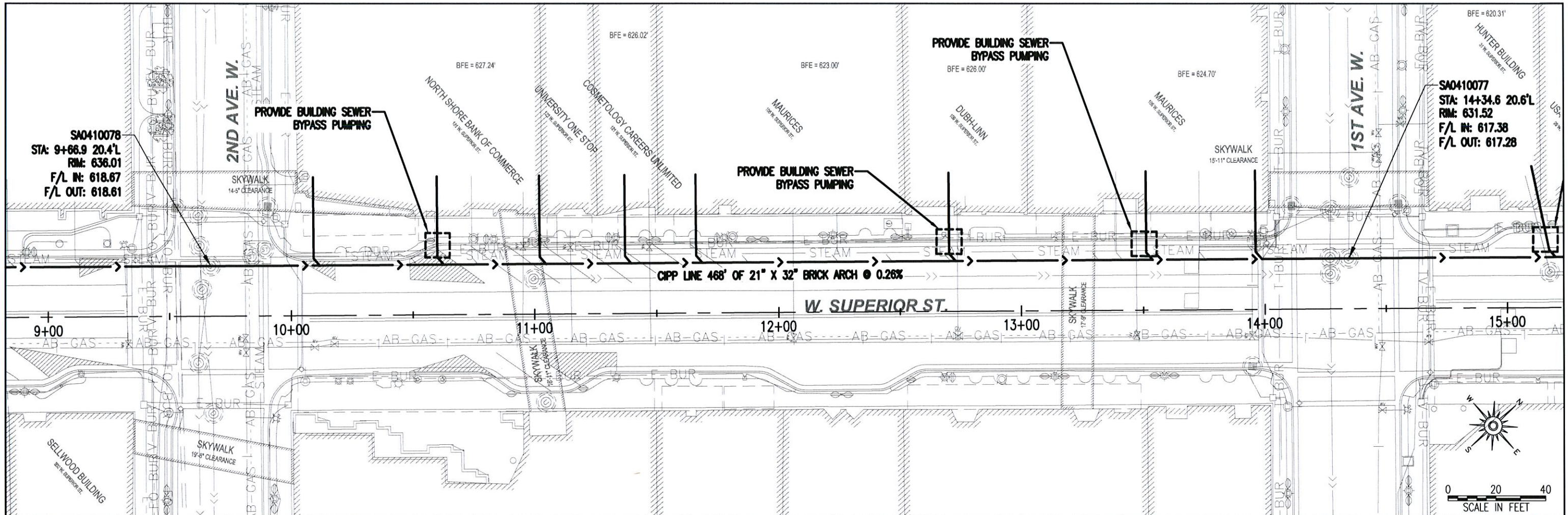
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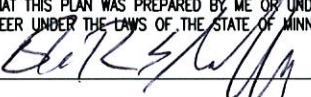
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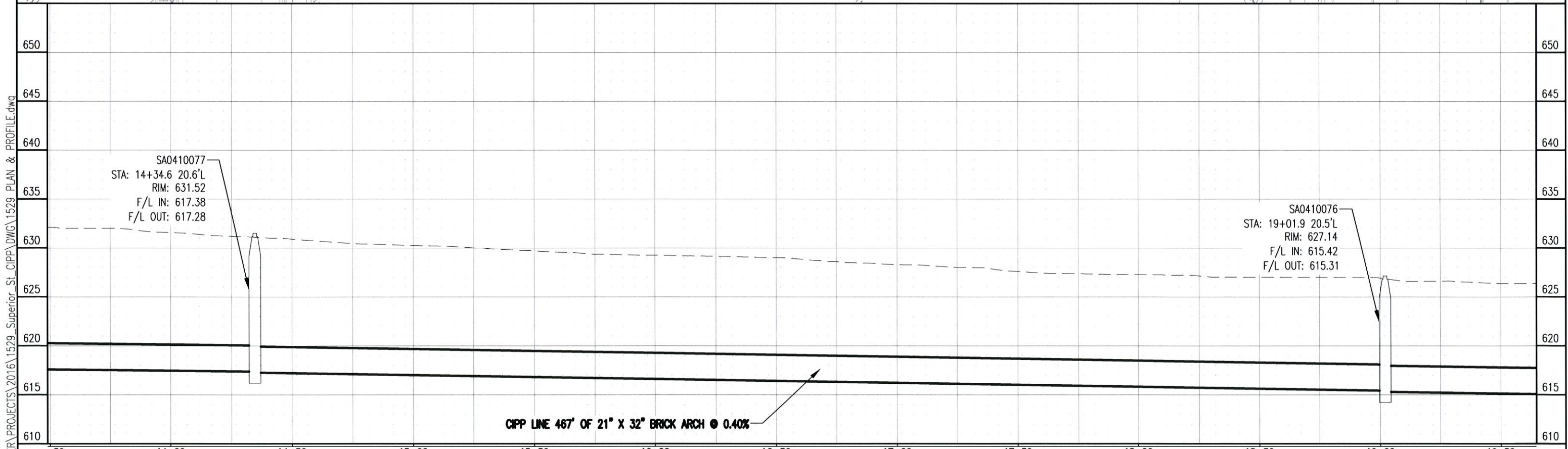
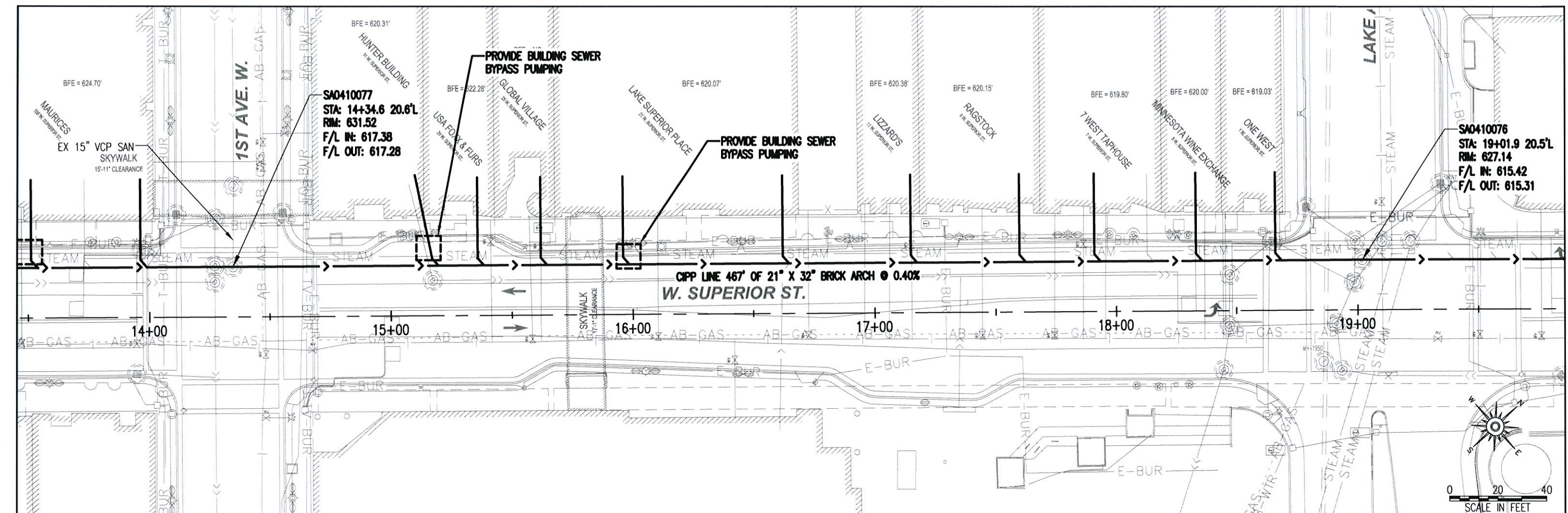
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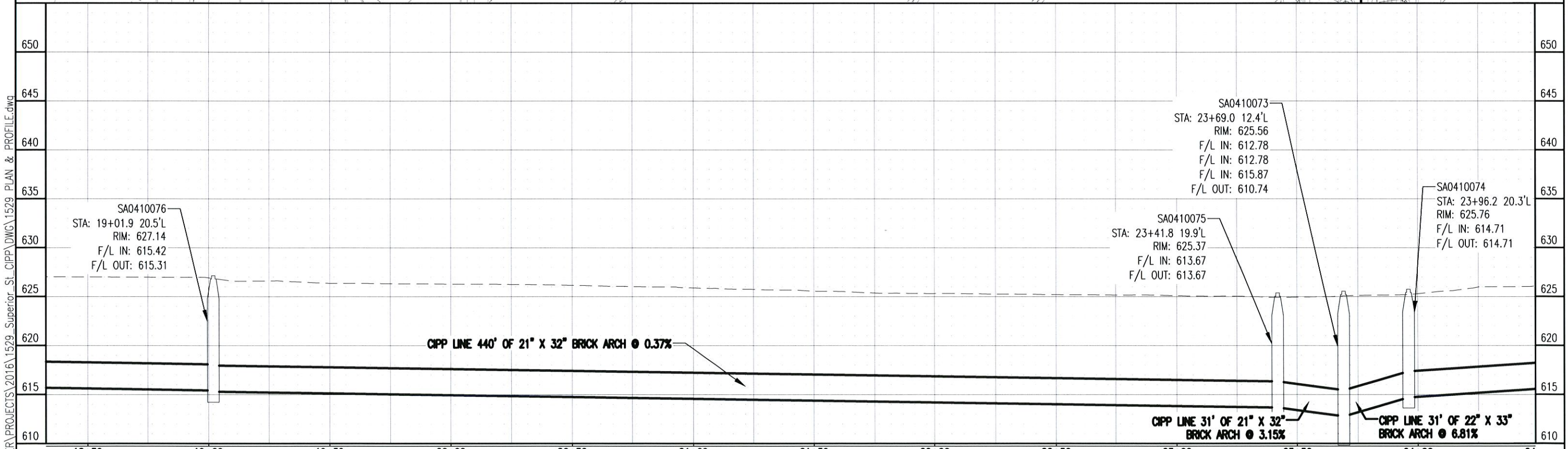
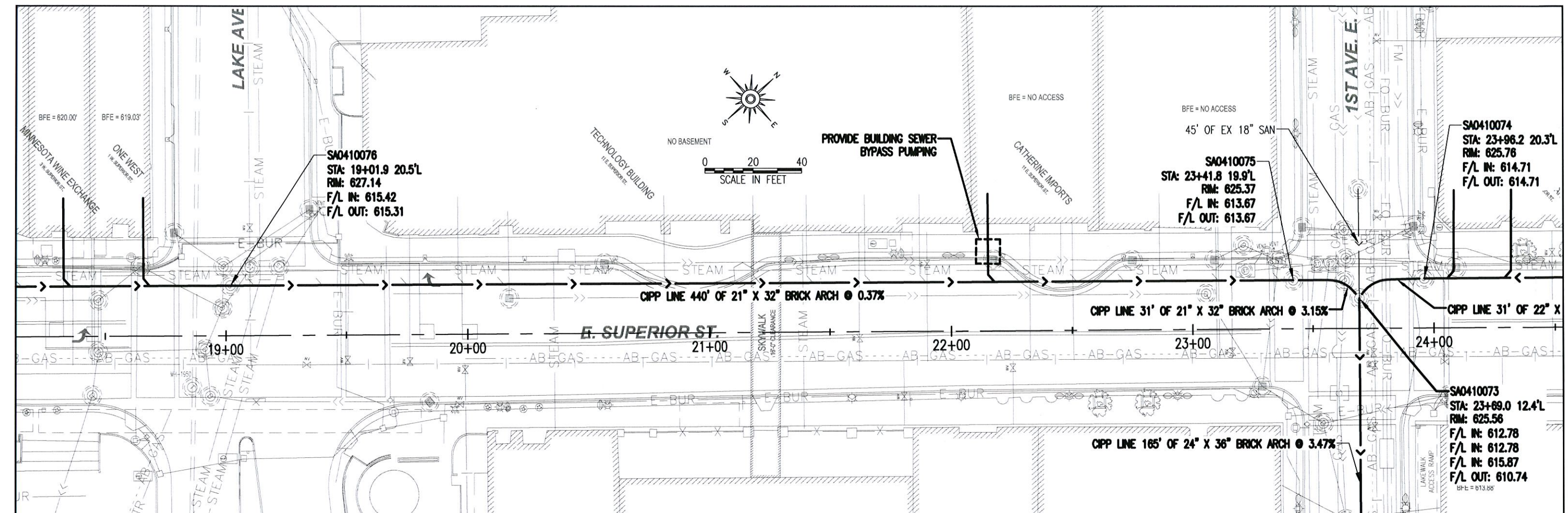


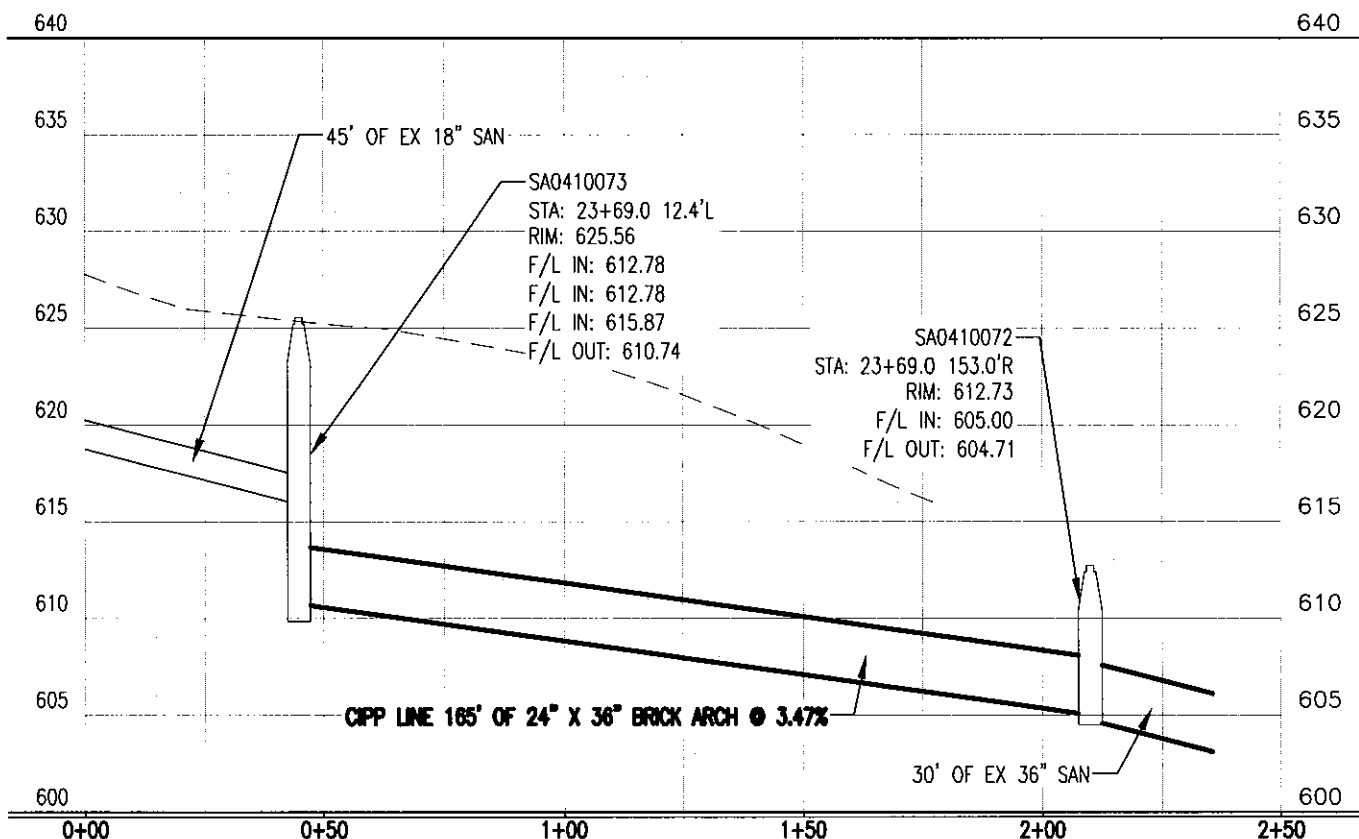
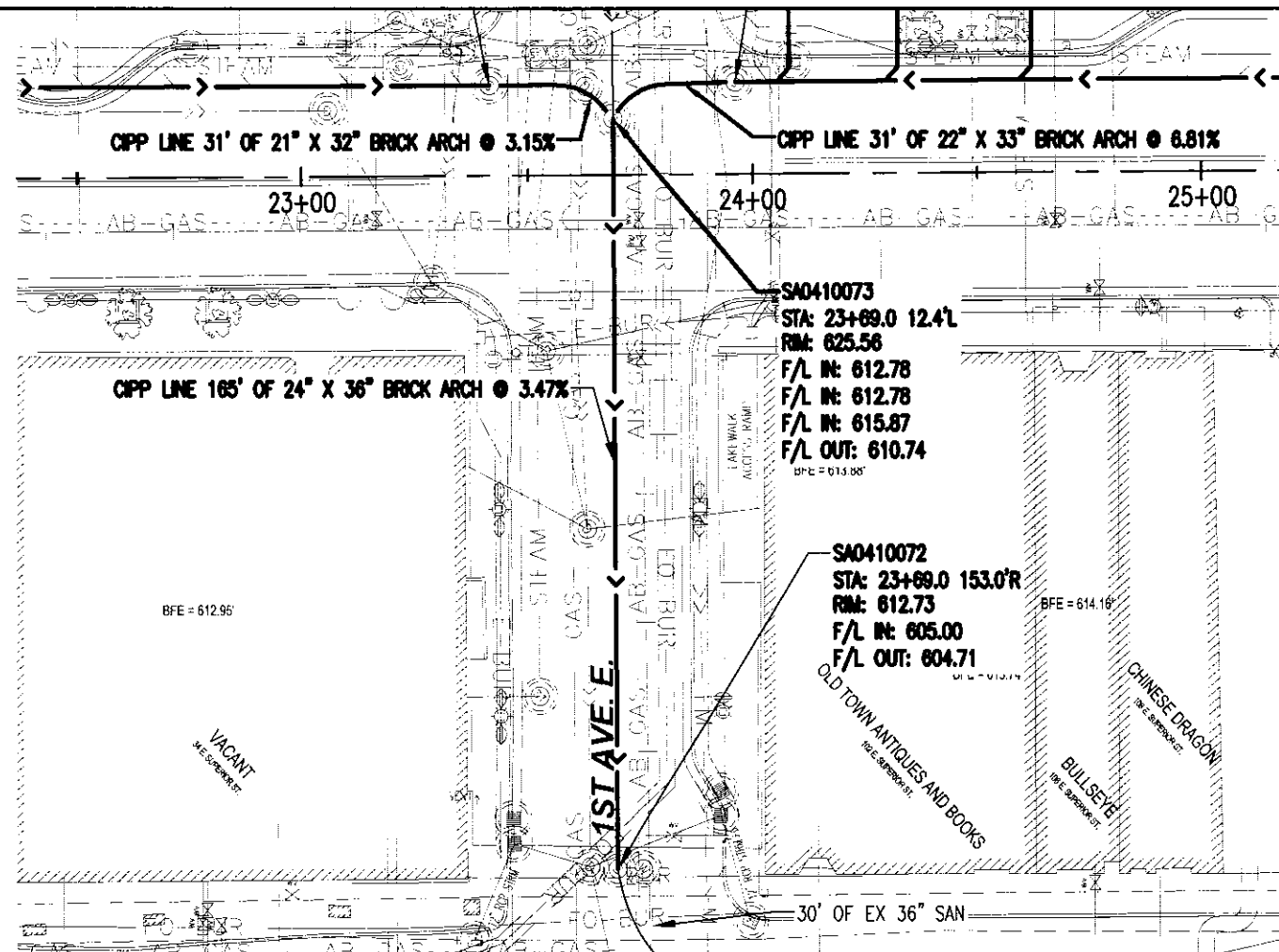


I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		DATE: 4/1/2016		CITY OF DULUTH ENGINEERING DIVISION 411 W. 1ST ST. STE. 211 DULUTH, MN 55802		SUPERIOR STREET SANITARY SEWER LINING		DRAWN BY: JJM	
SIGNATURE: 	ERIC SHAFFER TYPE NAME	LIC. NO: 25374		CITY PROJECT NO.: 1529	STATE AID PROJECT NO.:	WEST 100 BLOCK SHEET NO. 6 OF 13			



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SIGNATURE:	ERIC SHAFFER TYPE NAME	LIC. NO: 25374		CITY PROJECT NO.: 1529	STATE AID PROJECT NO.:	WEST 0 BLOCK SHEET NO. 7 OF 13			





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SIGNATURE: *Eric Shaffer*

ERIC SHAFFER
TYPE NAME

DATE: 4/1/2016

LIC. NO: 25374



CITY OF DULUTH
ENGINEERING DIVISION
411 W. 1ST ST. STE. 211
DULUTH, MN 55802

SUPERIOR STREET SANITARY SEWER LINING

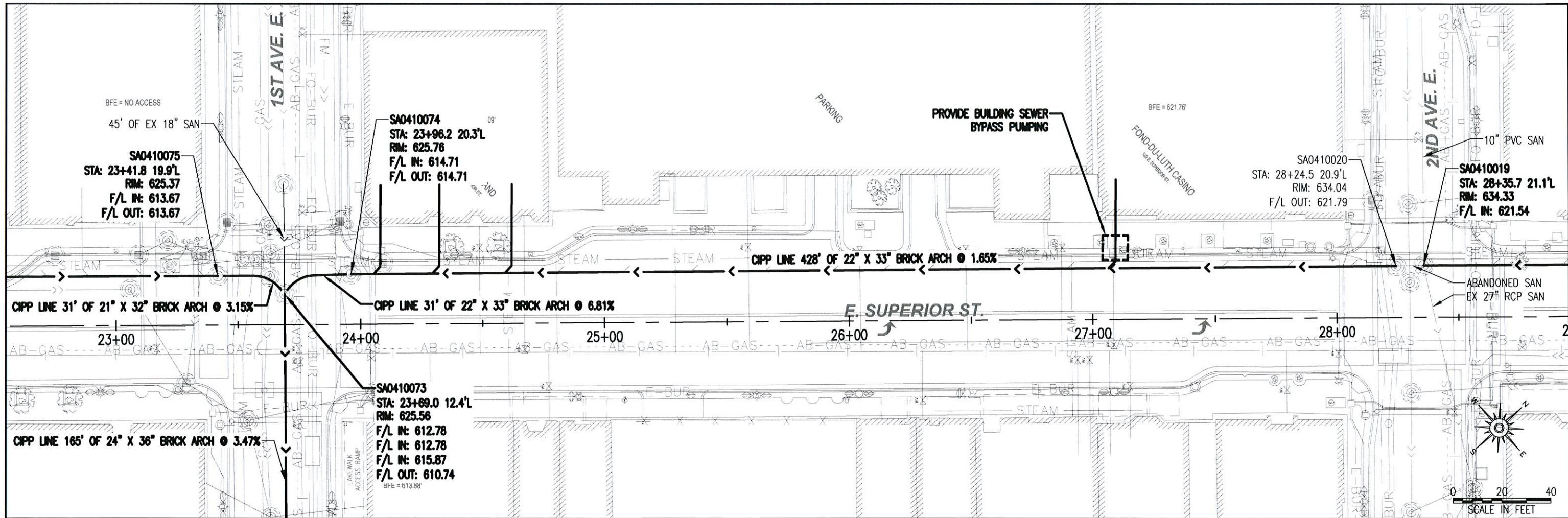
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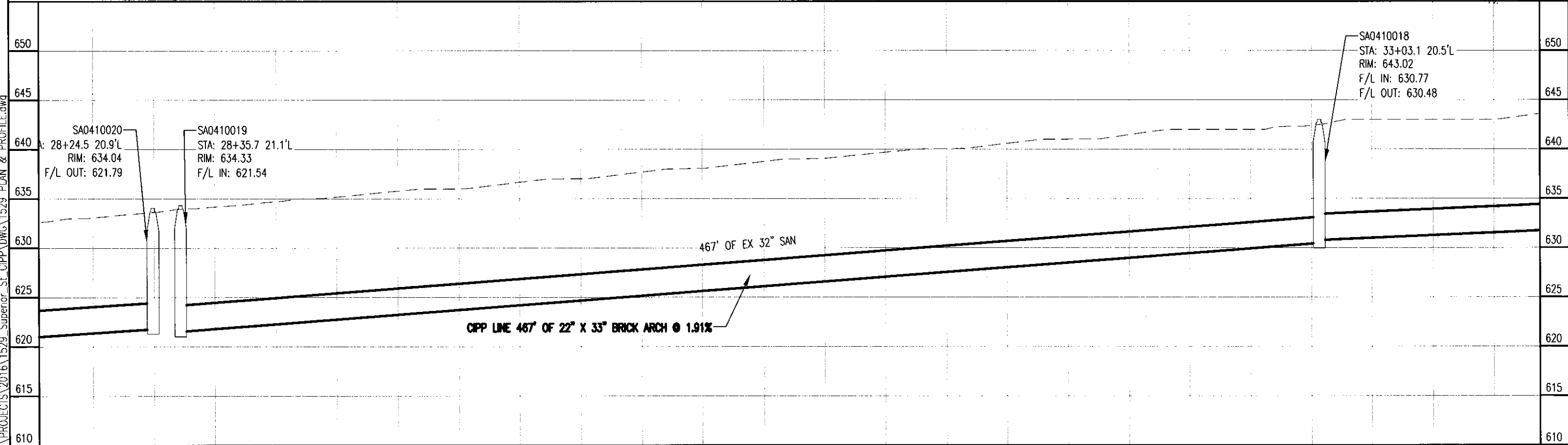
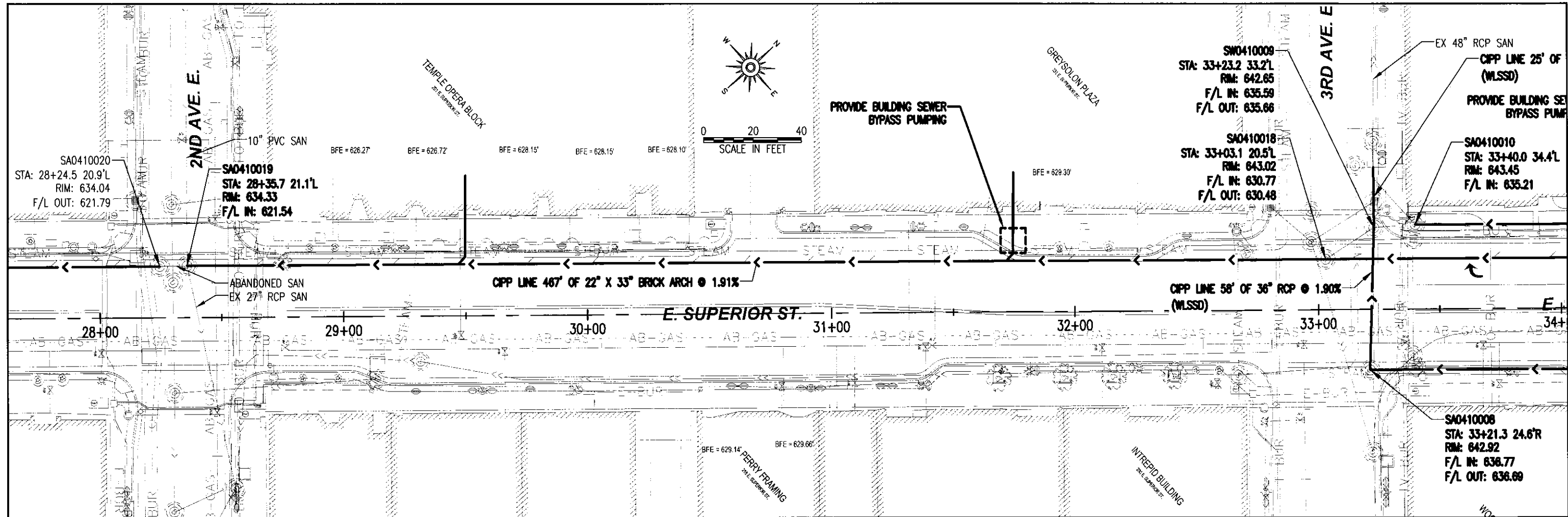
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S 1ST AVE E

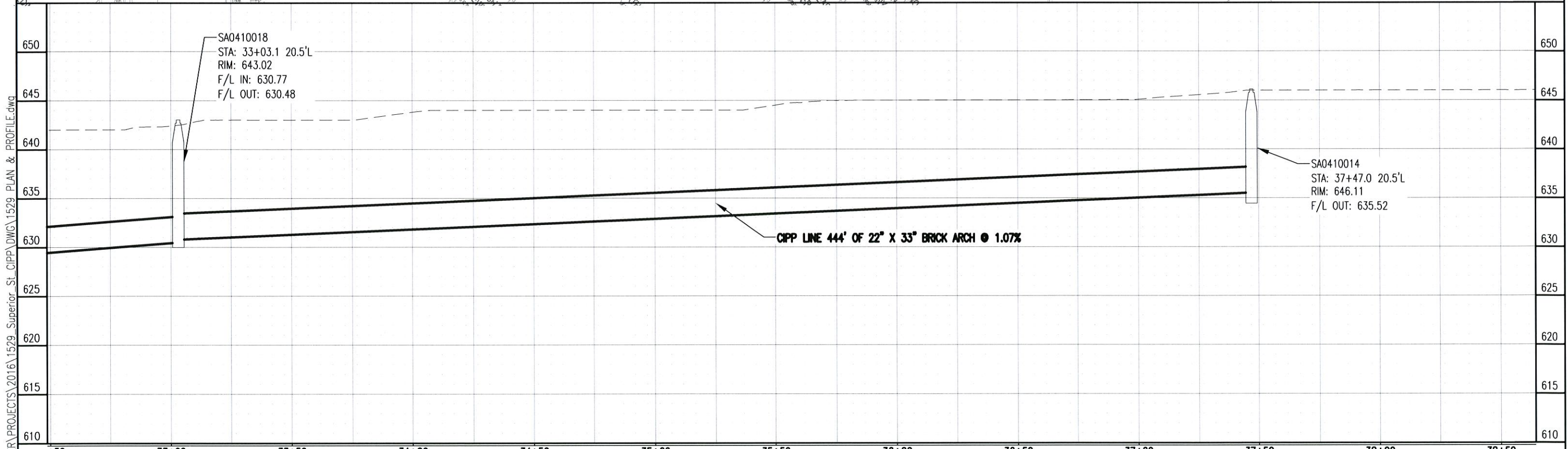
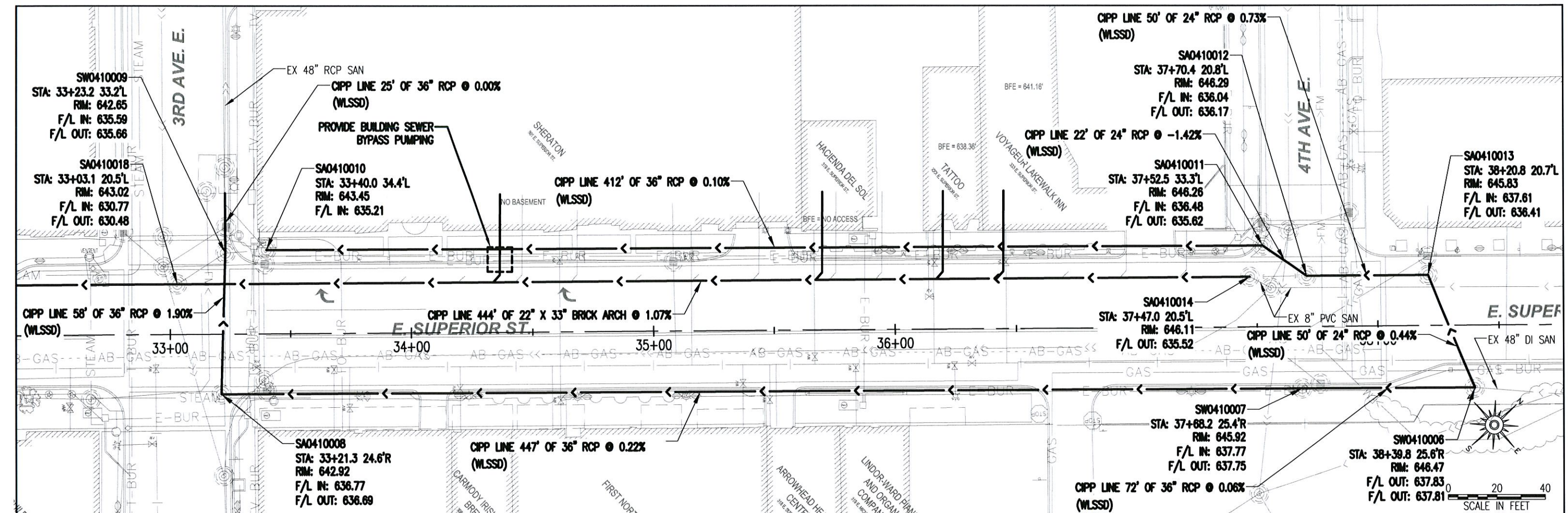
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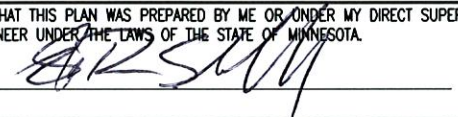


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SIGNATURE:	ERIC SHAFFER TYPE NAME	LIC. NO: 25374	CITY PROJECT NO.: 1529		STATE AID PROJECT NO.:		EAST100 BLOCK	
							SHEET NO. 10 OF 13	



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SIGNATURE: 	ERIC SHAFFER TYPE NAME	LIC. NO: 25374			CITY PROJECT NO.: 1529	STATE AID PROJECT NO.:	EAST 300 BLOCK	

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