

TUSCARORA TOWNSHIP

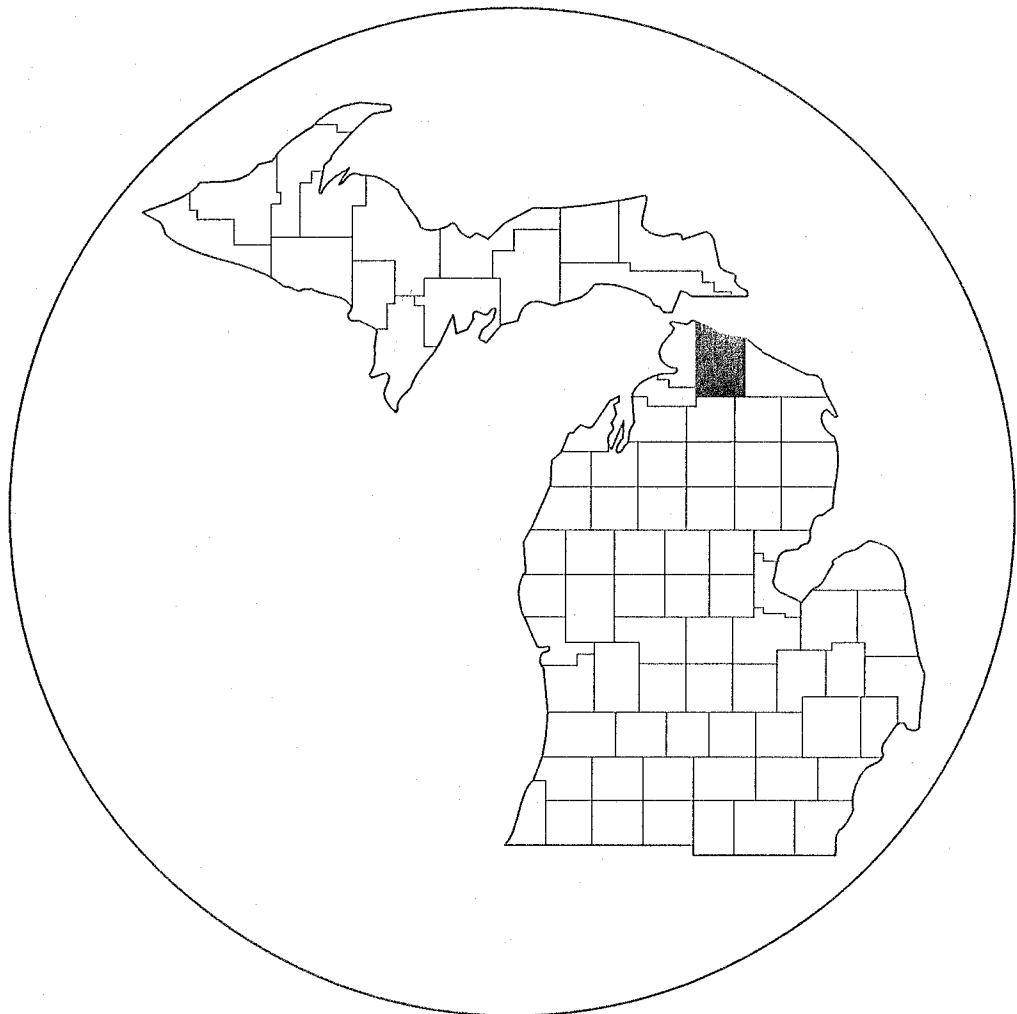
SEWER EXPANSION

PHASE 1

PROJECT OVERVIEW

THE PURPOSE OF THIS PROJECT IS TO PROVIDE SANITARY SEWER COLLECTION SYSTEM INFRASTRUCTURE TO A TOTAL OF 202 HOMES. SEWER SERVICE WILL BE PROVIDED PRIMARILY THROUGH GRAVITY SEWER CONNECTIONS, BUT WILL ALSO INCLUDE AREA OF LOW PRESSURE SEWER. THIS SYSTEM WILL EXPAND UPON THE EXISTING WASTEWATER SYSTEM, CONNECTING TO THE EXISTING SANITARY COLLECTION SYSTEM.

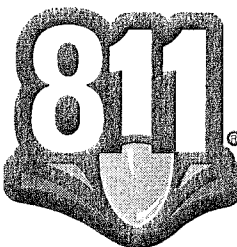
PROJECT NUMBER: 22-5797



COUNTY KEY

TITLE SHEET LEGEND

- PROPOSED PROJECT
- EXISTING ROADS
- CITY STREET
- STATE ROUTES
- FEDERAL ROUTES
- CITY, VILLAGE LIMITS
- TOWNSHIP LIMITS
- COUNTY LINE



Know what's below.
Call before you dig.

CONTRACT FOR: TUSCARORA TOWNSHIP -
SANITARY SEWER EXPANSION PHASE 1



MARK	DATE	DESCRIPTION
0	1/3/23	OWNER REVIEW
1	5/1/23	PERMIT SUBMITTAL

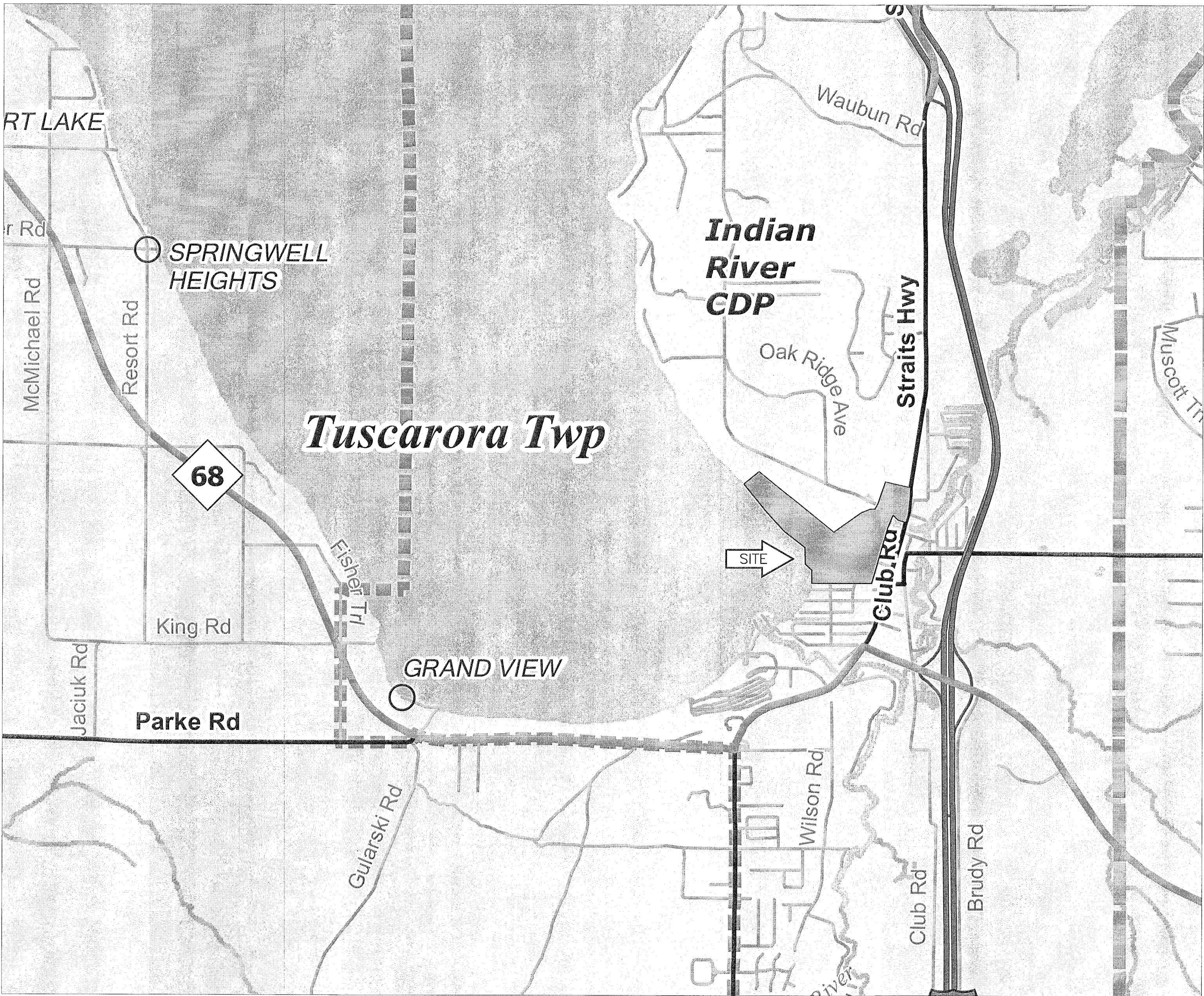
SEAL

Performance Engineers, Inc.
Civil / Structural Engineering

406 Petoskey Avenue
Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-0084
www.performanceeng.com

DWG NO.	DESCRIPTION
C100	TITLE SHEET
C200	GENERAL NOTES & TYPICALS
C300	PLAN & PROFILE INDEX
C301	PLAN & PROFILE (STA. 300+00 TO 306+90)
C302	PLAN & PROFILE (STA. 306+90 TO 313+90)
C303	PLAN & PROFILE (STA. 200+00 TO 207+35)
C304	PLAN & PROFILE (STA. 100+00 TO 105+95)
C305	PLAN & PROFILE (STA. 105+80 TO 114+15)
C306	PLAN & PROFILE (STA. 114+05 TO 120+45)
C307	PLAN & PROFILE (STA. 130+00 TO 135+15)
C308	PLAN & PROFILE (STA. 170+00 TO 175+50)
C309	PLAN & PROFILE (STA. 140+00 TO 146+85) & (STA. 160+00 TO 161+85)
C310	PLAN & PROFILE (STA. 1000+00 TO 1005+50)
C311	PLAN & PROFILE (STA. 400+00 TO 407+00)
C312	PLAN & PROFILE (STA. 407+00 TO 415+00)
C313	PLAN & PROFILE (STA. 415+00 TO 424+50)
C314	PLAN & PROFILE (STA. 450+00 TO 451+80) & (STA. 460+00 TO 462+80)
C315	PLAN & PROFILE (STA. 470+00 TO 476+05)
C316	PLAN & PROFILE (STA. 424+50 TO 434+00)
C317	PLAN & PROFILE (STA. 434+00 TO 441+75)
C318	PLAN & PROFILE (STA. 500+00 TO 508+90)
C319	PLAN & PROFILE (STA. 510+00 TO 514+00)
C320	PLAN & PROFILE (STA. 520+00 TO 526+00)
C321	PLAN & PROFILE (STA. 210+00 TO 212+20, (STA. 220+00 TO 222+30) & (STA. 230+00 TO 232+05)
C400	SANITARY DETAILS
C401	PUMP STATION DETAILS

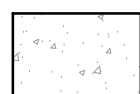
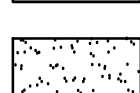
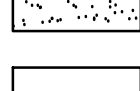
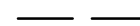
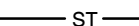
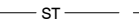
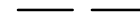
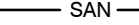
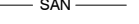
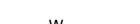
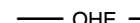
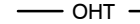
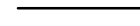
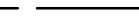
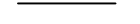
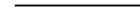
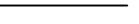
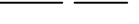
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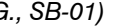


LOCATION MAP
1"=2000'

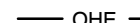
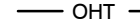
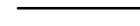
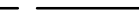
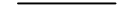
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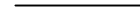
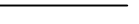
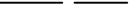
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WATER AND SEWER SYMBOLS	PLAN SHEET PATTERNS	UNDERGROUND UTILITY LIFESTYLES
 PROPOSED CATCH BASIN  EXISTING CATCH BASIN  PROPOSED STORM MANHOLE  EXISTING STORM MANHOLE  PROPOSED SANITARY MANHOLE  EXISTING SANITARY MANHOLE  PROPOSED SANITARY CLEANOUT  EXISTING SANITARY CLEANOUT  PROPOSED WATER MANHOLE  EXISTING WATER MANHOLE  PROPOSED FIRE HYDRANT  EXISTING FIRE HYDRANT  PROPOSED WATER VALVE AND BOX  EXISTING WATER VALVE  PROPOSED WATER SHUTOFF  EXISTING WATER SHUTOFF  PROPOSED WATER WELL  EXISTING WATER WELL	 CONCRETE PAVEMENT/DRIVE APPROACH  REMOVING PAVEMENT (HMA)  REMOVING (CONCRETE) PAVEMENT/DRIVEWAY/ SIDEWALK  REMOVING CURB, GUTTER AND CURB & GUTTER ROAD SURFACE PATTERNS  ASPHALT  GRAVEL  SEASONAL	<div><div> ST  ST</div><div> ST  ST</div><div> SAN  SAN</div><div> SAN  SAN</div><div> W  W</div><div> W  W</div><div> G  G</div><div> G  G</div><div> U/E  U/E</div><div> U/E  U/E</div><div> U/T  U/T</div><div> U/T  U/T</div><div> U/CATV 
U/CATV</div><div> U/CATV  U/CATV</div><div> F/O  F/O</div><div> F/O  F/O</div></div> <div><div> OHE  OHE</div><div> OHE  OHE</div><div> OHT  OHT</div><div> OHT  OHT</div><div> CATV  CATV</div><div> CATV  CATV</div></div> <div><div> P  P</div><div> R/W  R/W</div><div> S  S</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F  F</div><div> F

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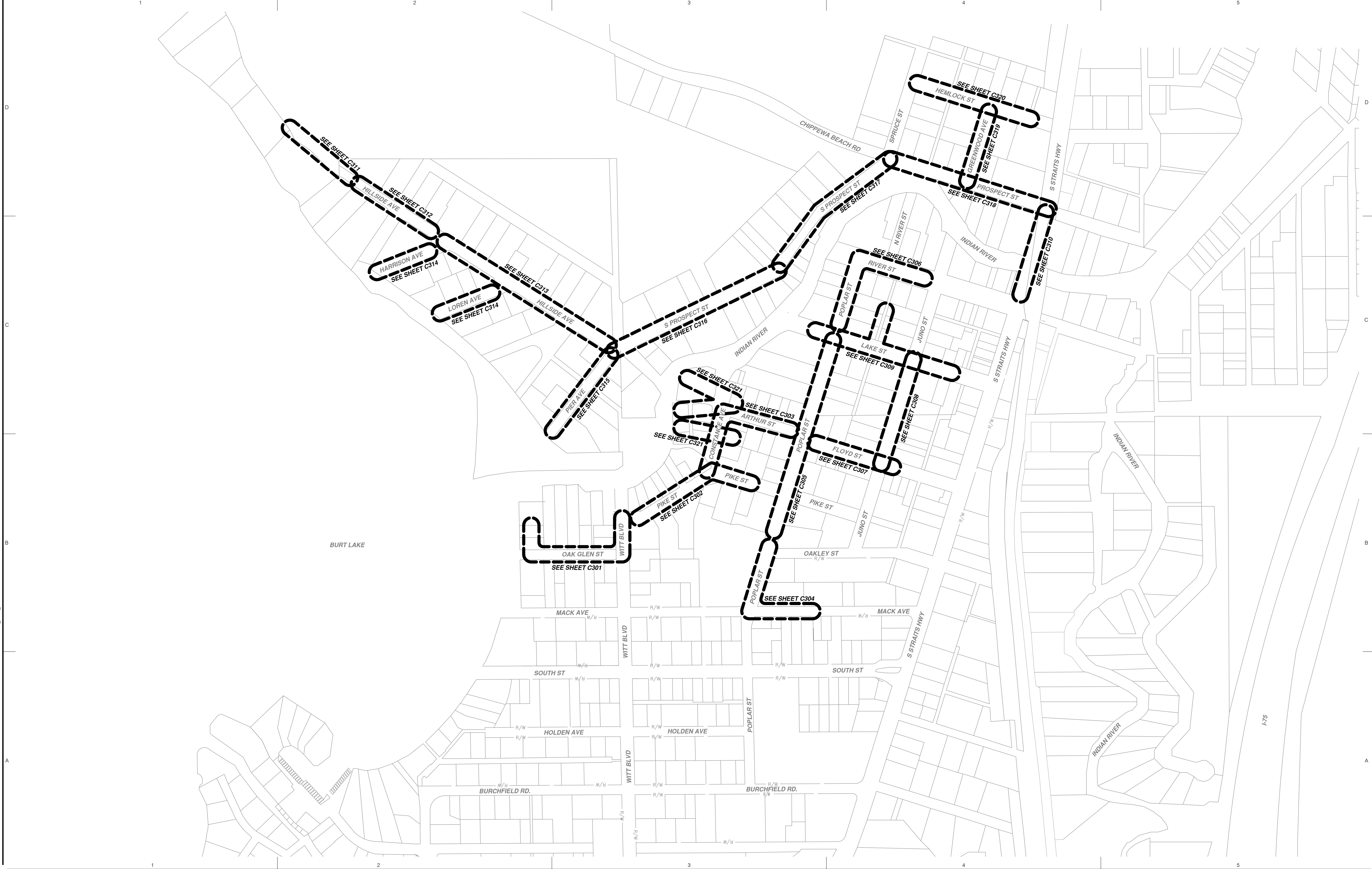
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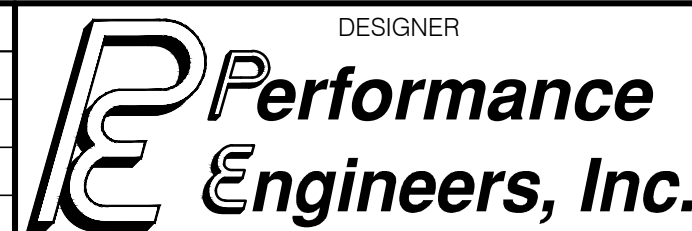
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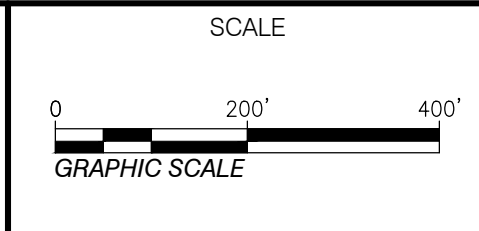
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PEI	5/1/23	1	PERMIT SUBMITTAL				



Performance Engineers, Inc.

406 Potoskey Avenue
Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-0084
www.performanceeng.com

OWNER
TUSCARORA TOWNSHIP

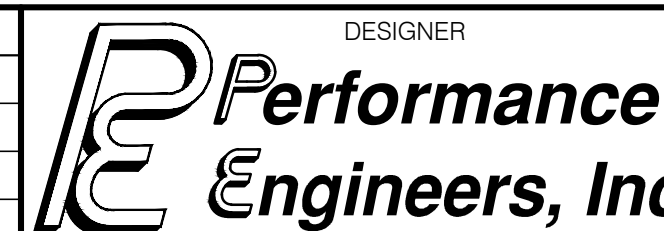


PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1
SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET	JOB NO.
PLAN & PROFILE SHEET INDEX	22-5797
	SHEET NO.
	C300

FILE NAME: C300_5797_LCTN.DWG
DRAWN BY: DATE: CORRECTED BY: DATE:

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				



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OWNER

TUSCARORA TOWNSHIP

SCALE

0 30' 60'

GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

PLAN & PROFILE

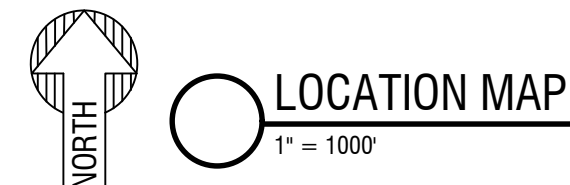
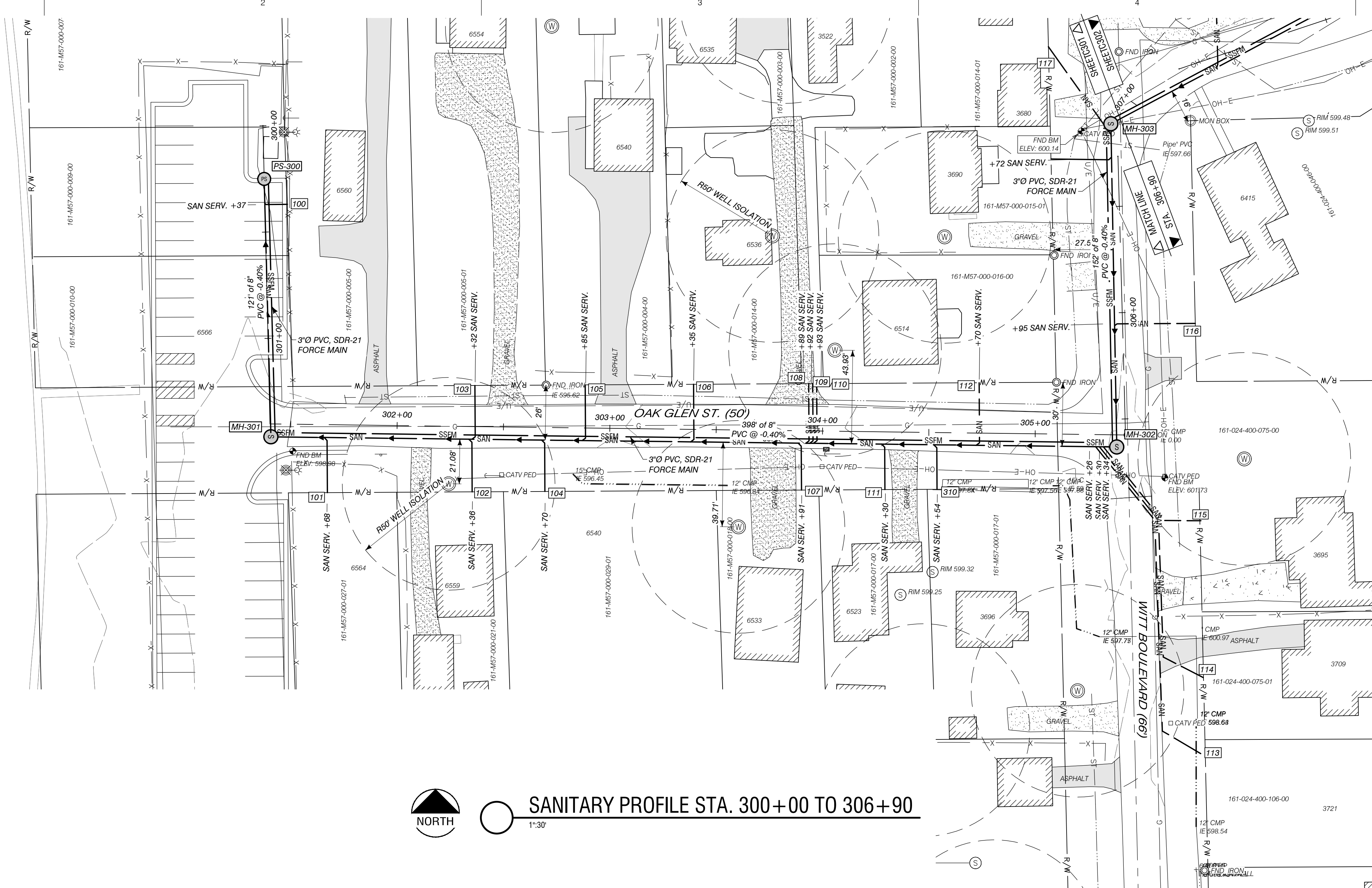
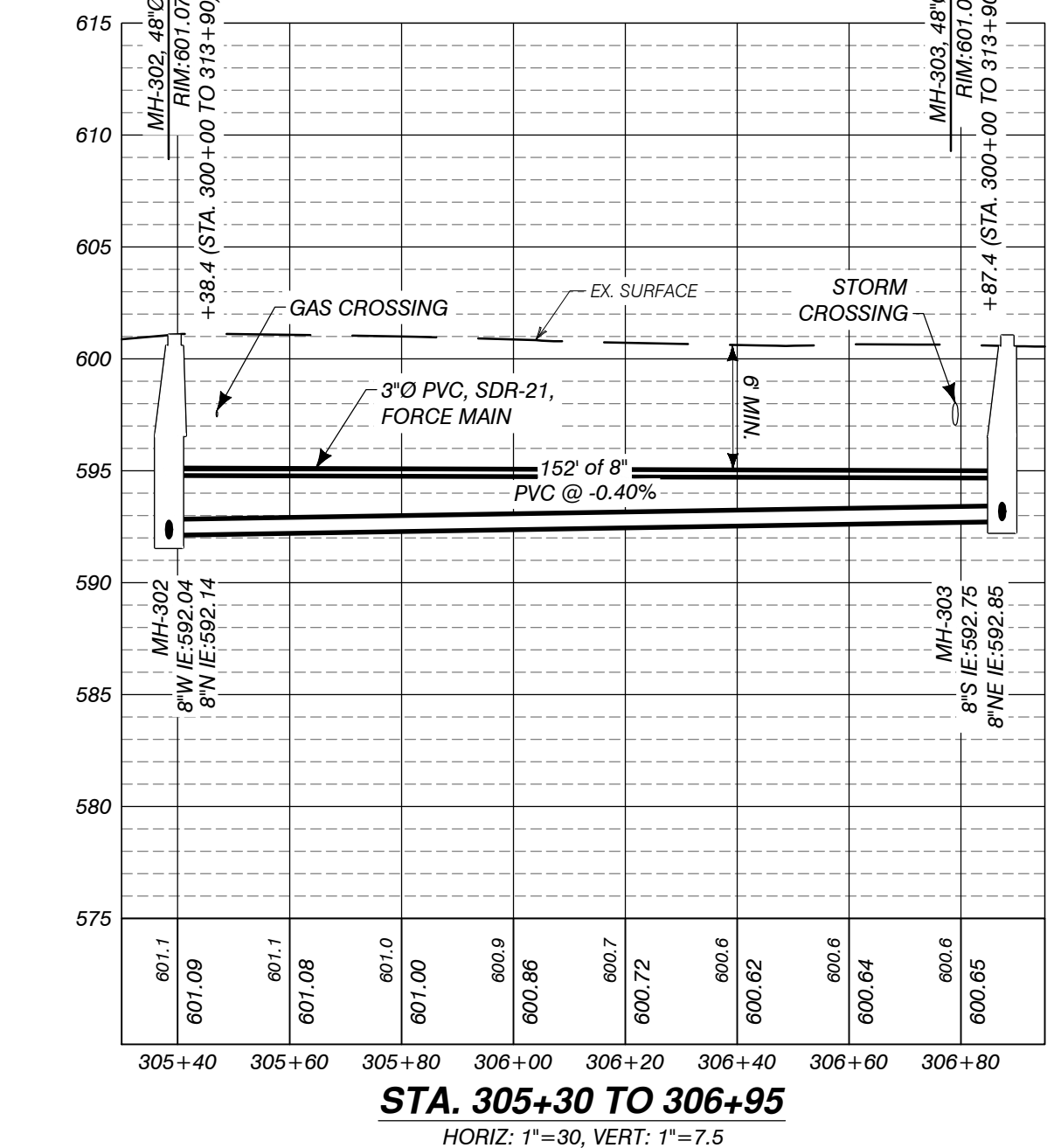
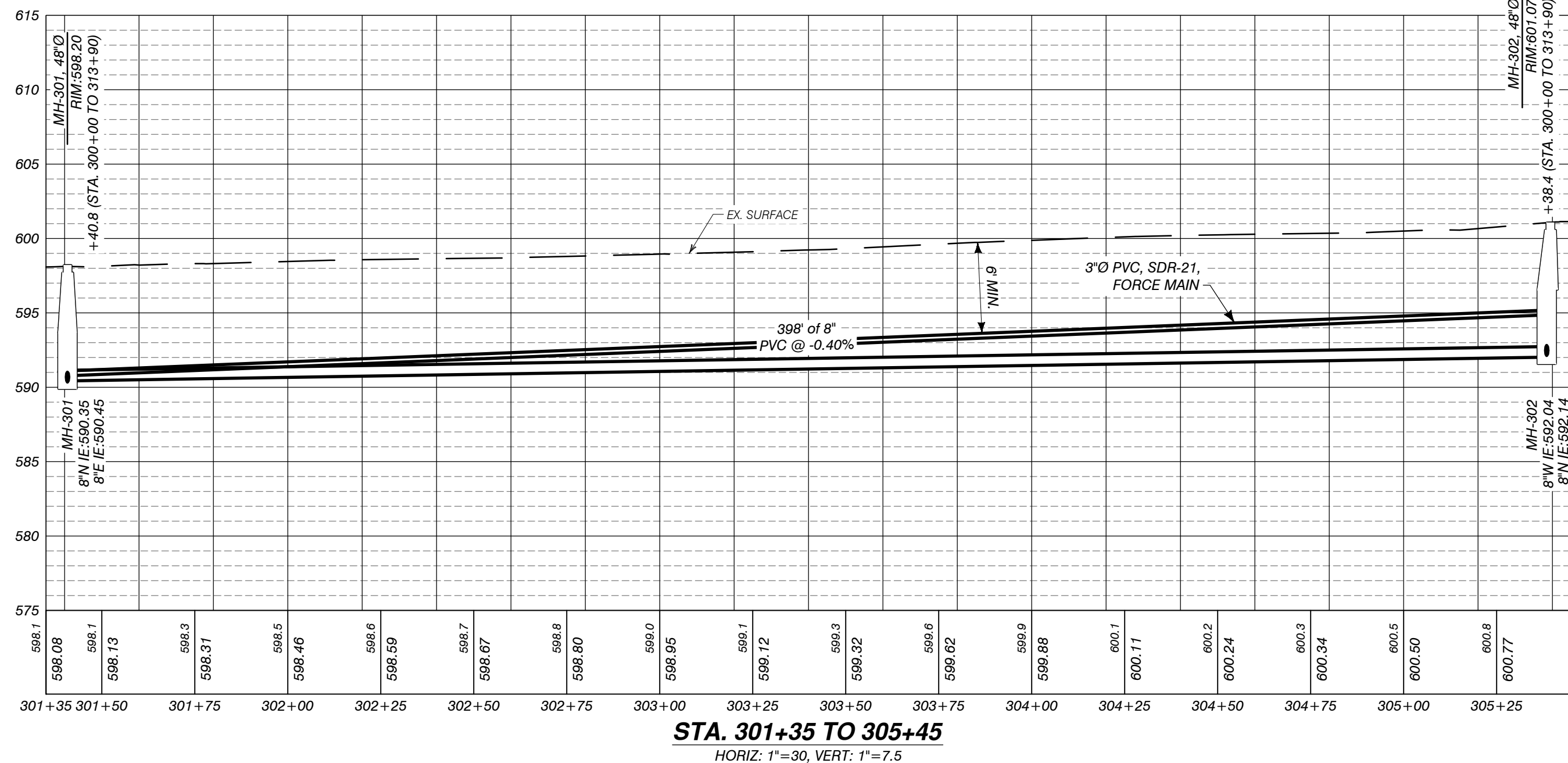
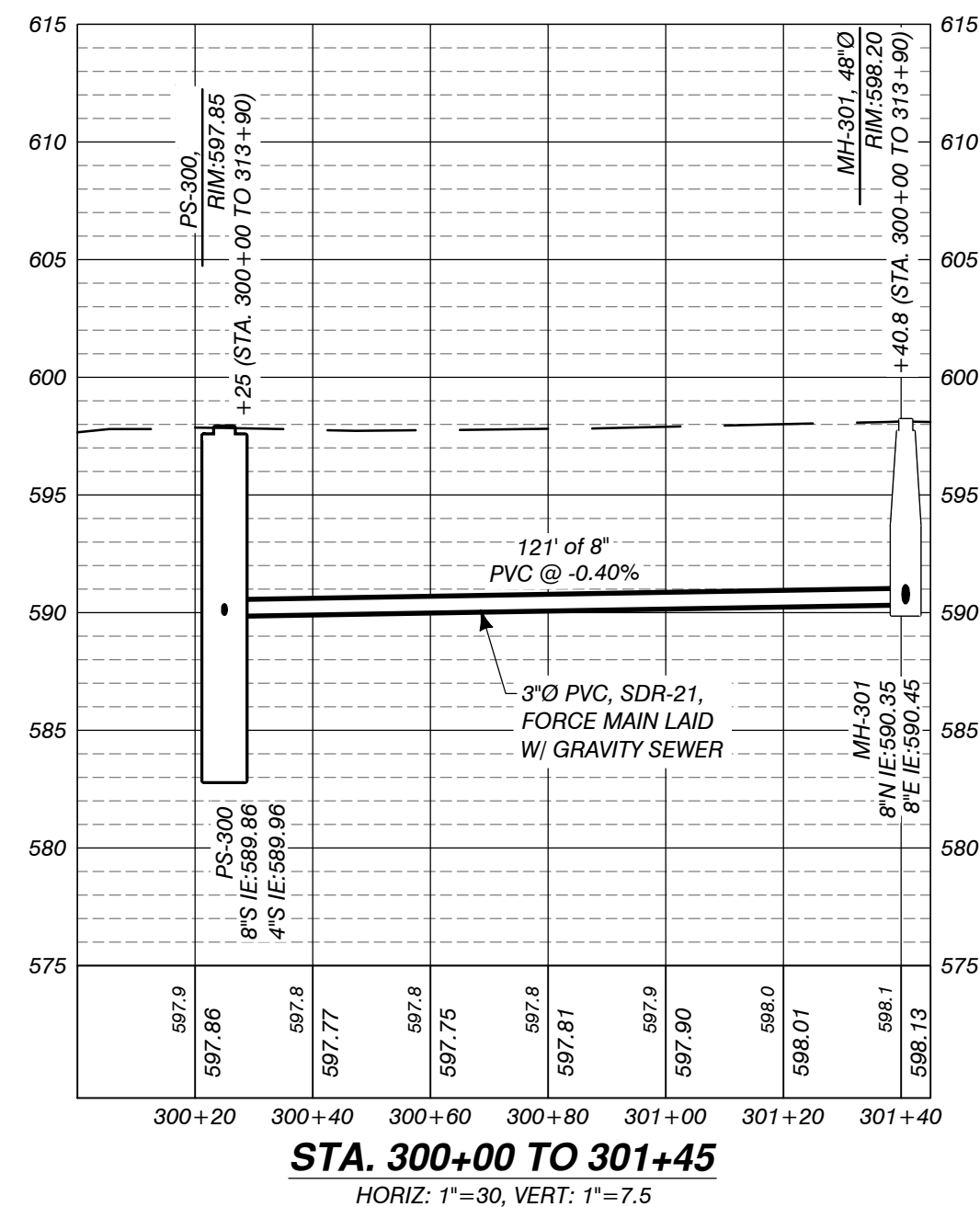
STA. 300+00 TO 306+90

JOB NO.

22-5797

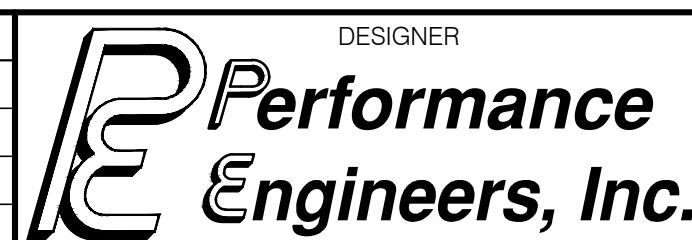
SHEET NO.

C301



SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
100	6560	300+37	300+37	-
101	6564	301+68	301+68	-
102	6559	302+36	302+36	-
103	6554	302+32	302+32	-
104	6540	302+70	302+70	-
105	6540	302+85	302+85	-
106	6536	303+35	303+35	-
107	6533	303+91	303+91	-
108	6535	303+89	303+89	-
109	3522	303+92	303+92	-
110	3690	303+93	303+93	-
111	6523	304+30	304+30	-
112	6514	304+70	304+70	-
113	3721	305+26	305+26	-
114	3709	305+30	305+30	-
115	3695	305+34	305+34	-
116	6415	305+95	305+95	-
117	3680	306+80	306+80	-
310	3696	304+54	304+54	-

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				



DESIGNER

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Phone: (231) 547-2121
Fax: (231) 547-0084
www.performanceeng.com

OWNER

TUSCARORA
TOWNSHIP

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SCALE

0 30' 60'

GRAPHIC SCALE

SHEET

PLAN & PROFILE

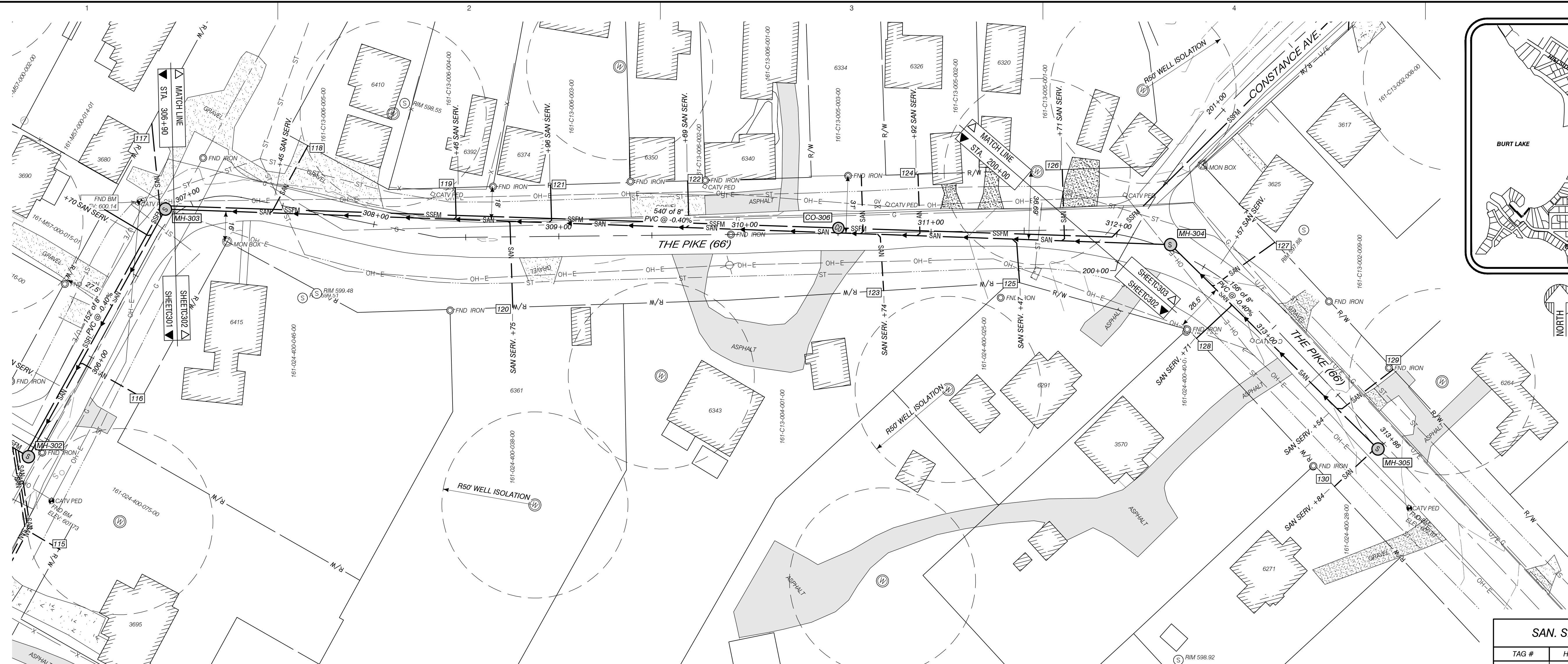
STA. 306+90 TO 313+90

JOB NO.

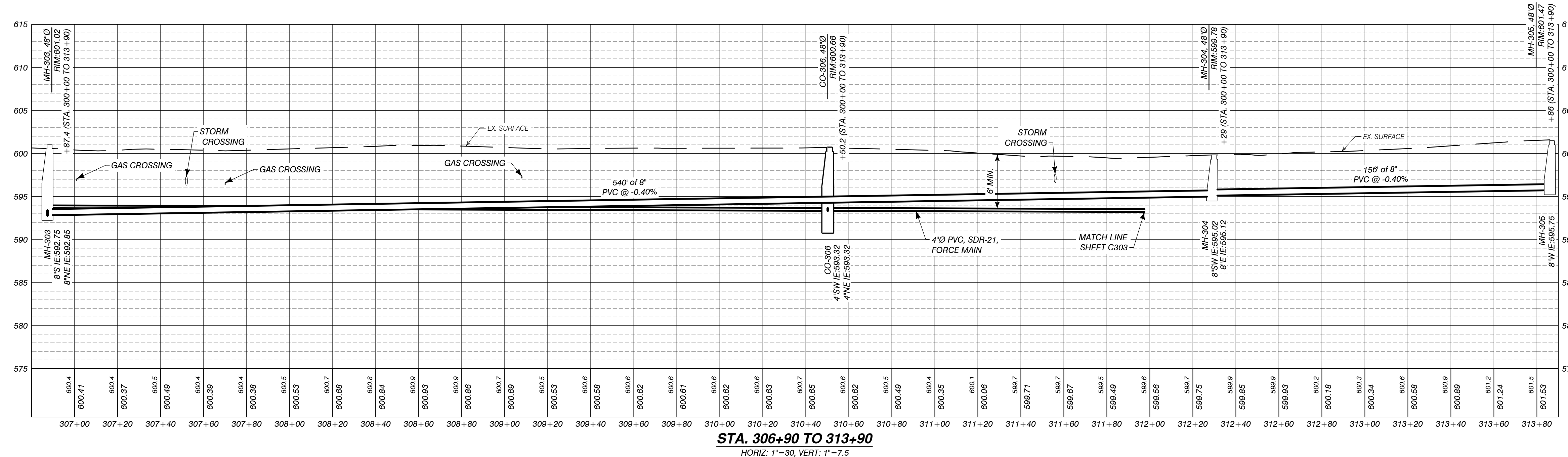
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SHEET NO.

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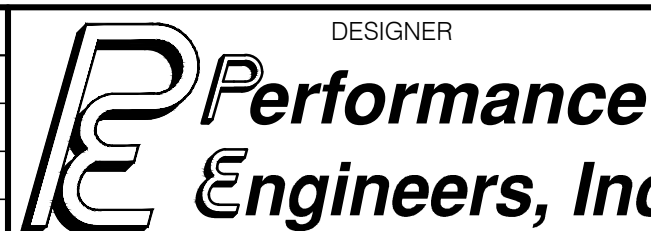


SANITARY PROFILE STA. 306+90 TO 313+90



SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
118	6410	307+45	307+50	-
119	6392	308+46	308+46	-
120	6361	308+75	308+75	-
121	6374	308+96	308+96	-
122	6350	309+69	309+69	-
123	6343	310+74	310+74	-
124	6326	310+92	310+92	-
125	6291	311+47	311+47	-
126	6320	311+71	311+71	-
127	3625	312+57	312+62	-
128	3570	312+71	312+71	-
129	6264	313+54	313+54	-
130	6271	313+84	313+84	-

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				



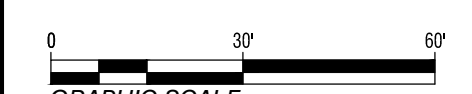
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OWNER

TUSCARORA TOWNSHIP

SCALE



GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

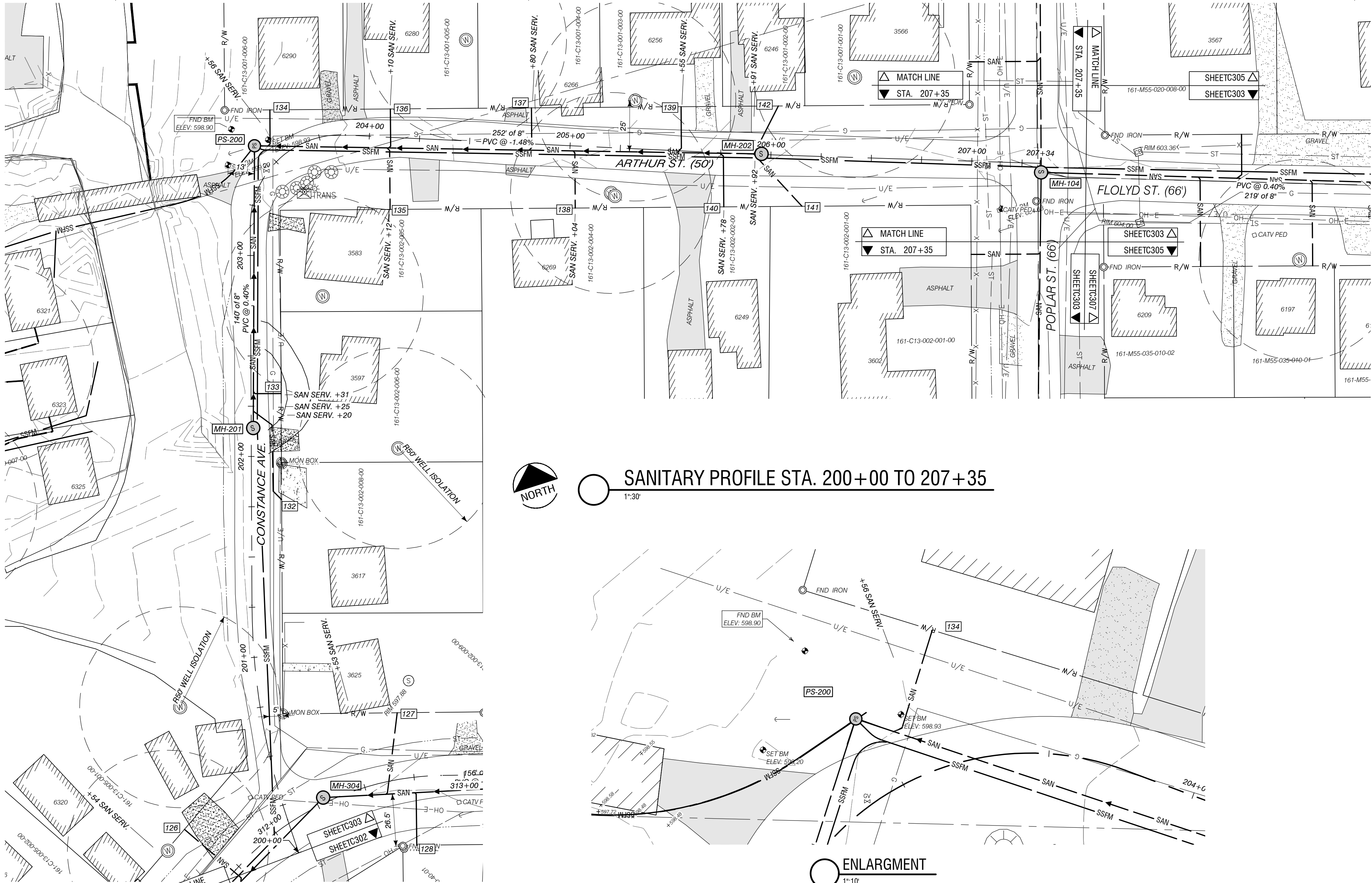
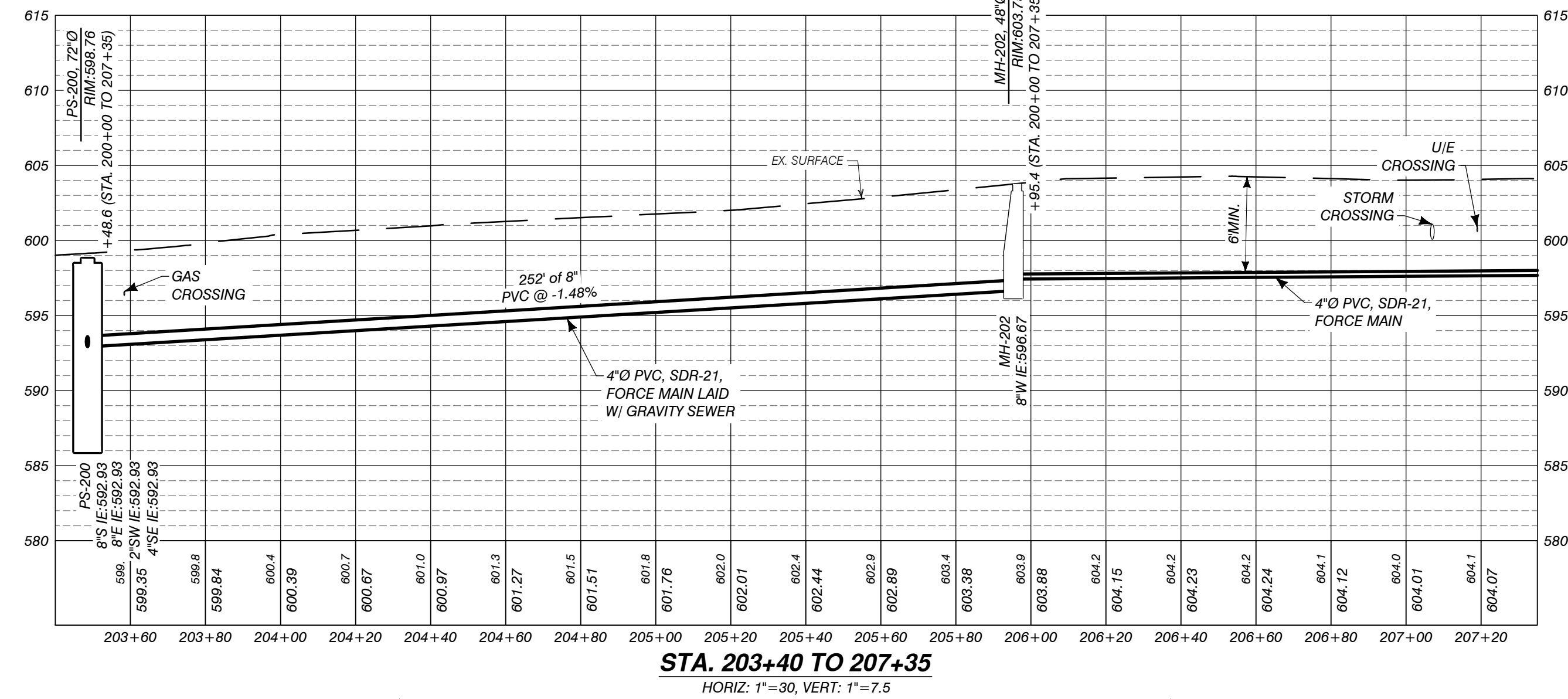
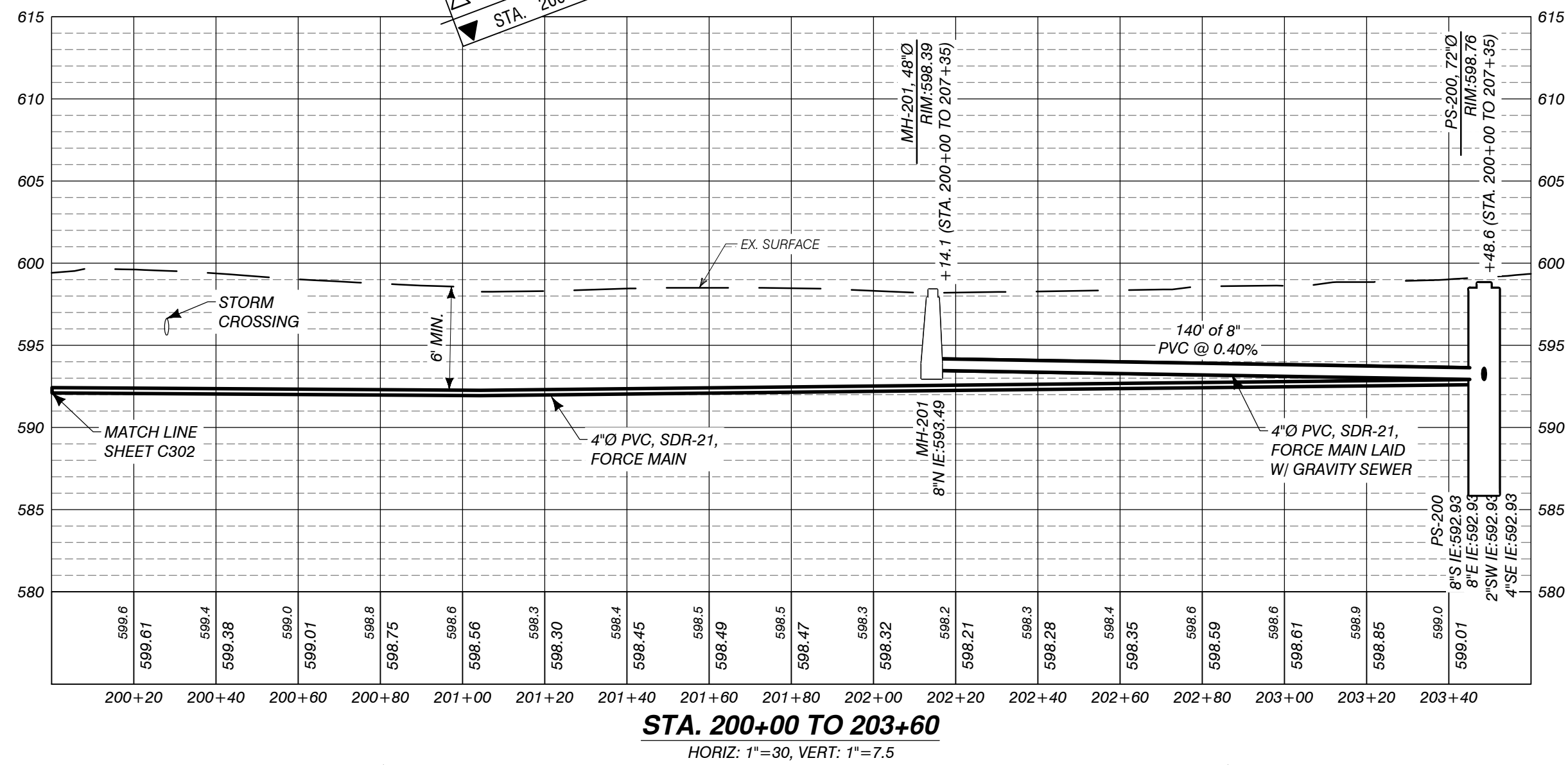
PLAN & PROFILE
STA. 200+00 TO 207+35

JOB NO.

22-5797

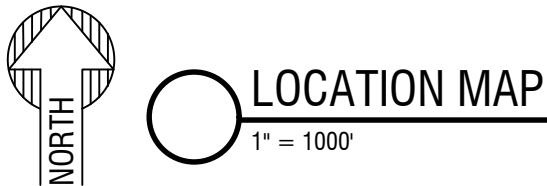
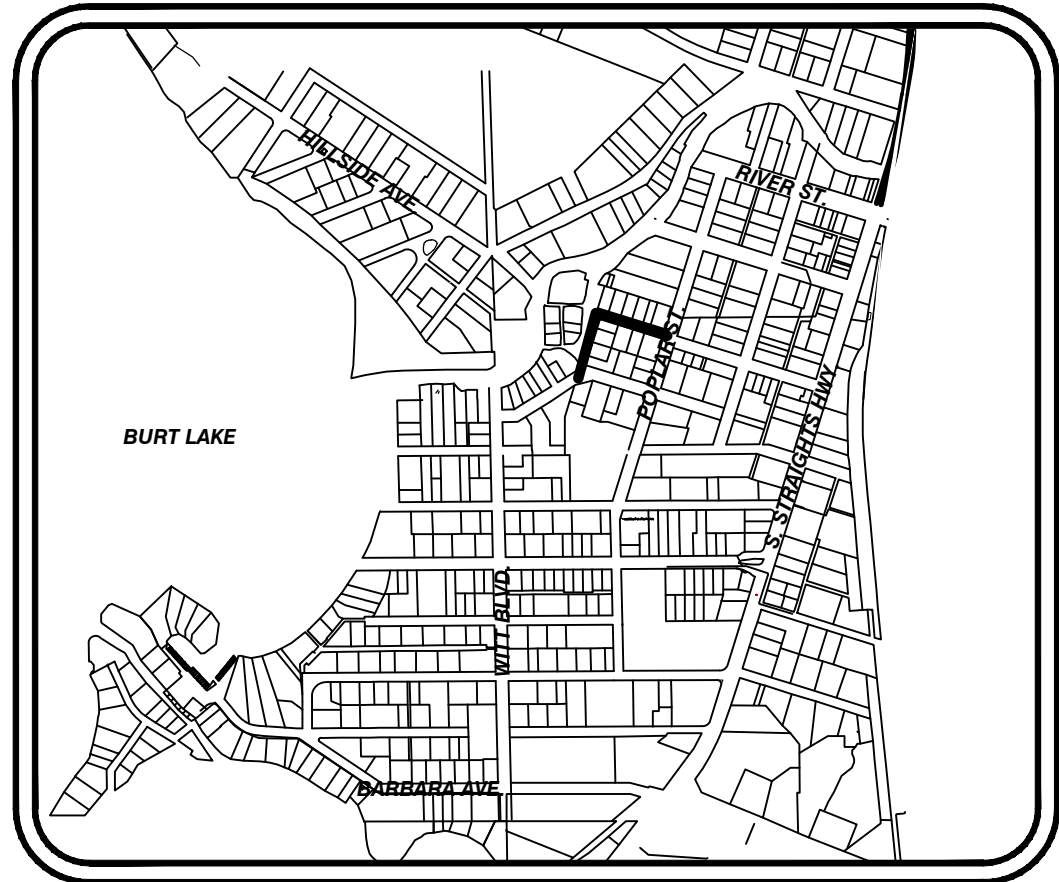
SHEET NO.

C303



SANITARY PROFILE STA. 200+00 TO 207+35

ENLARGMENT



SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
132	3617	202+25	201+78	-
133	3597	202+31	202+31	-
134	6290	203+56	203+56	-
135	3583	204+12	204+12	-
136	6280	204+10	204+10	-
137	6266	204+80	204+80	-
138	6269	205+04	205+04	-
139	6256	205+55	205+55	-
140	6249	205+78	205+78	-
141	3602	205+92	205+92	-
142	6246	205+91	205+91	-

C:\USERS\AARON\NORDMAN\PERFORMANCE ENGINEERS\PROJECTS\5797\DRAWINGS\C304_5797_PLAN.DWG - C304 - PLOTTED 5/22/2023 9:06 AM BY AARON NORDMAN

COPYRIGHT: PERFORMANCE ENGINEERS, INC 2022

B

A

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER

406 Potoskey Avenue

Charlevoix, Michigan 49720

Phone: (231) 547-2121

Fax: (231) 547-0084

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PERFORMANCE

ENGINEERS, INC.

OWNER

TUSCARORA TOWNSHIP

SCALE

0

30'

60'

GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP

SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET	JOB NO.
PLAN & PROFILE	22-5797
STA. 100+00 TO 105+95	SHEET NO.
	C304

SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
143	6307	100+04	100+04	-
144	NO ADDRESS	100+07	100+07	-
145	3711	102+34	102+34	-
146	3609	103+30	103+30	-
147	6330	104+22	104+22	-
148	3651	105+27	105+27	-
149	3654	105+30	105+30	-

NORTH

1"=30'

SANITARY PROFILE STA. 100+00 TO 102+85

NORTH

1"=30'

SANITARY PROFILE STA. 102+70 TO 105+95

NORTH

1"=100'

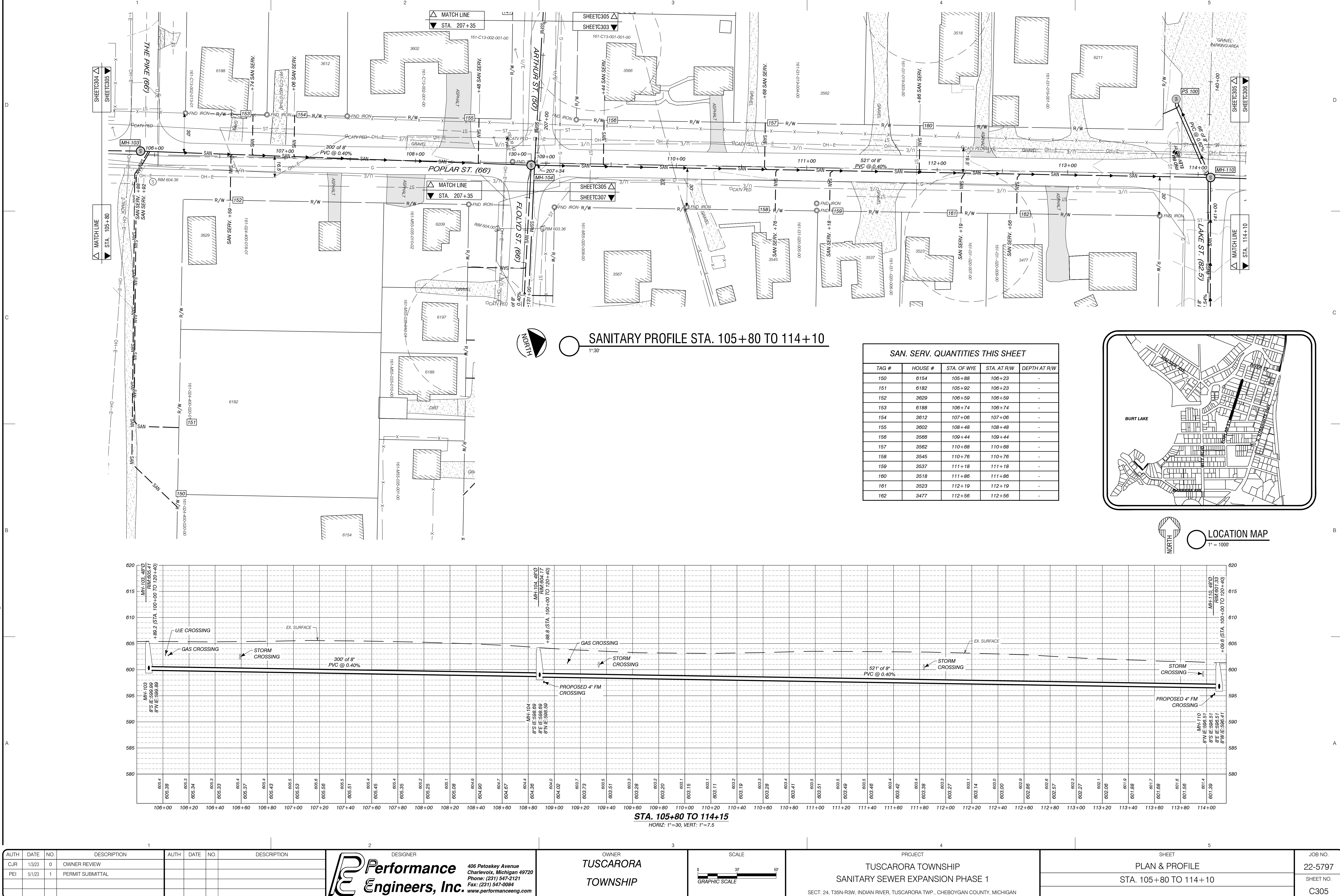
LOCATION MAP

FILE NAME: C304_5797_PLAN.DWG

B

A

DRAWN BY: DATE: CHECKED BY: CORRECTED BY: DATE:



AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

Performance Engineers, Inc.

DESIGNER

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Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-0084
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OWNER

TUSCARORA TOWNSHIP

PROJECT

**TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1**

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

PLAN & PROFILE

STA. 105+80 TO 114+10

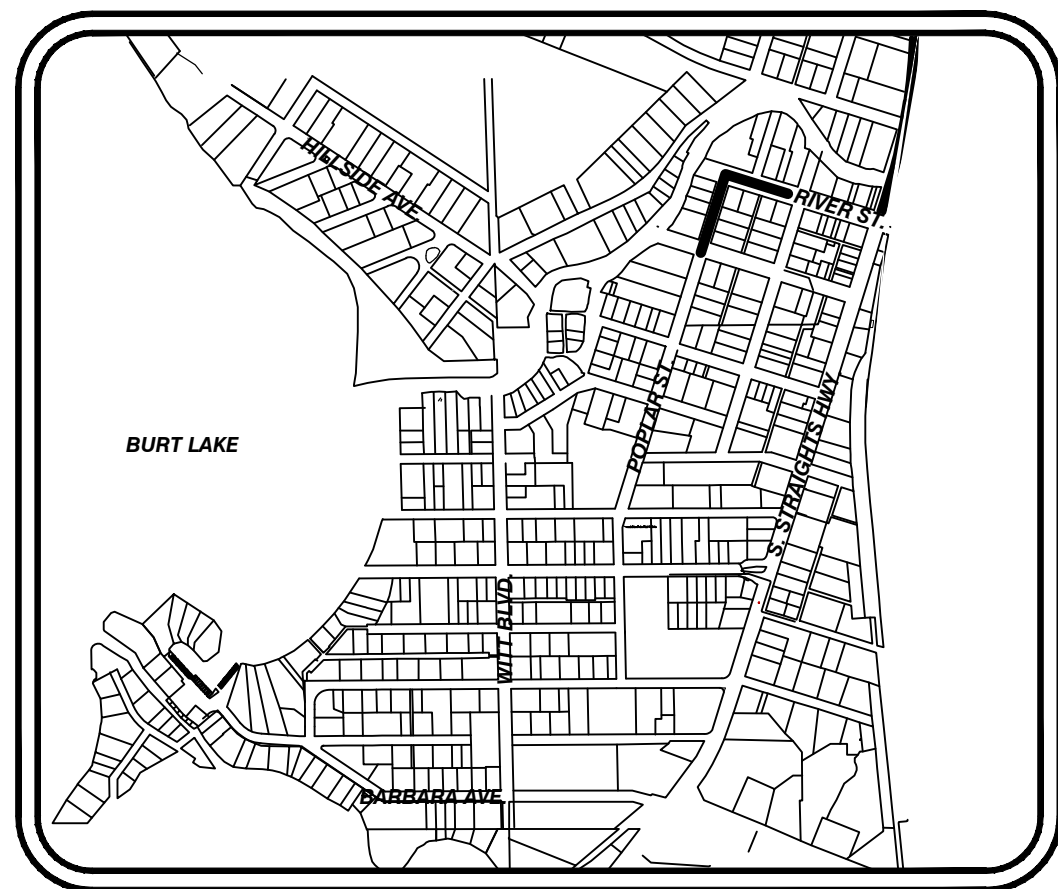
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JOB NO.

22-5797

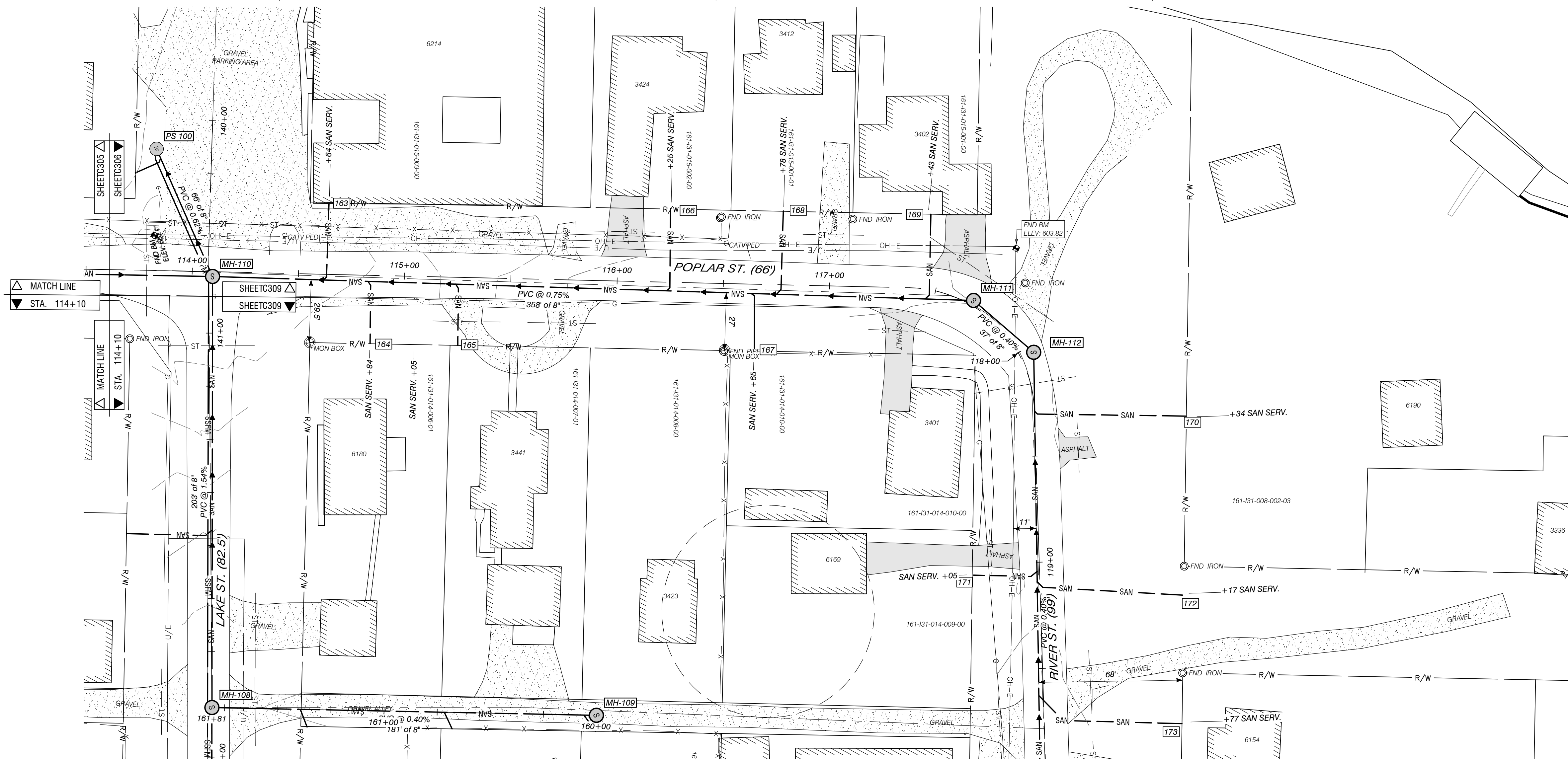
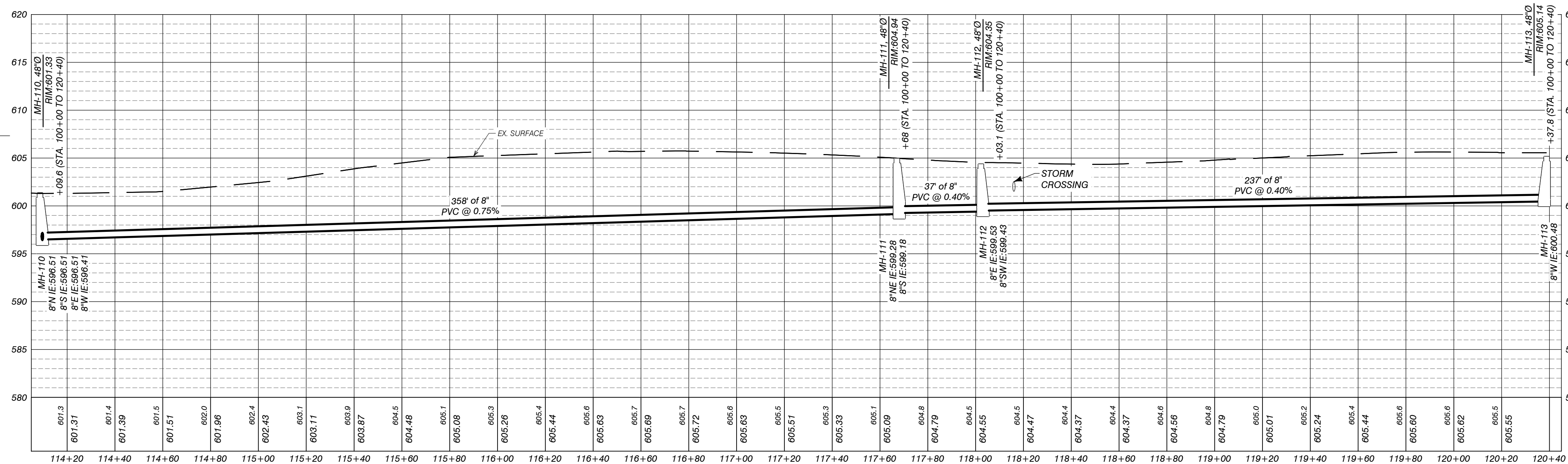
SHEET NO.

C305



1" = 1000'

SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
163	6214	114+64	114+64	-
164	6180	114+84	114+84	-
165	3441	115+05	115+25	-
166	3424	116+25	116+25	-
167	3401	116+65	116+65	-
168	3412	116+78	116+78	-
169	3402	117+43	117+43	-
170	6190	118+34	118+34	-
171	6169	119+05	119+05	-
172	3336	119+17	119+17	-
173	6154	119+77	119+77	-
174	6159	120+32	120+32	-
175	3285	120+39	120+39	-
176	6138	120+34	120+34	-
177	6145	120+37	120+37	-

1st:30^a

HORIZ: 1"=30, VERT: 1"=7.5

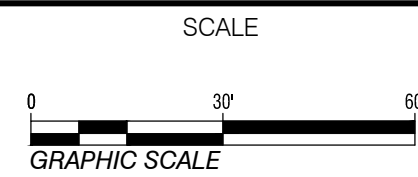
AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER

**Performance
Engineers, Inc.**

**406 Petoskey Avenue
Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-0084
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OWNER
TUSCARORA
TOWNSHIP

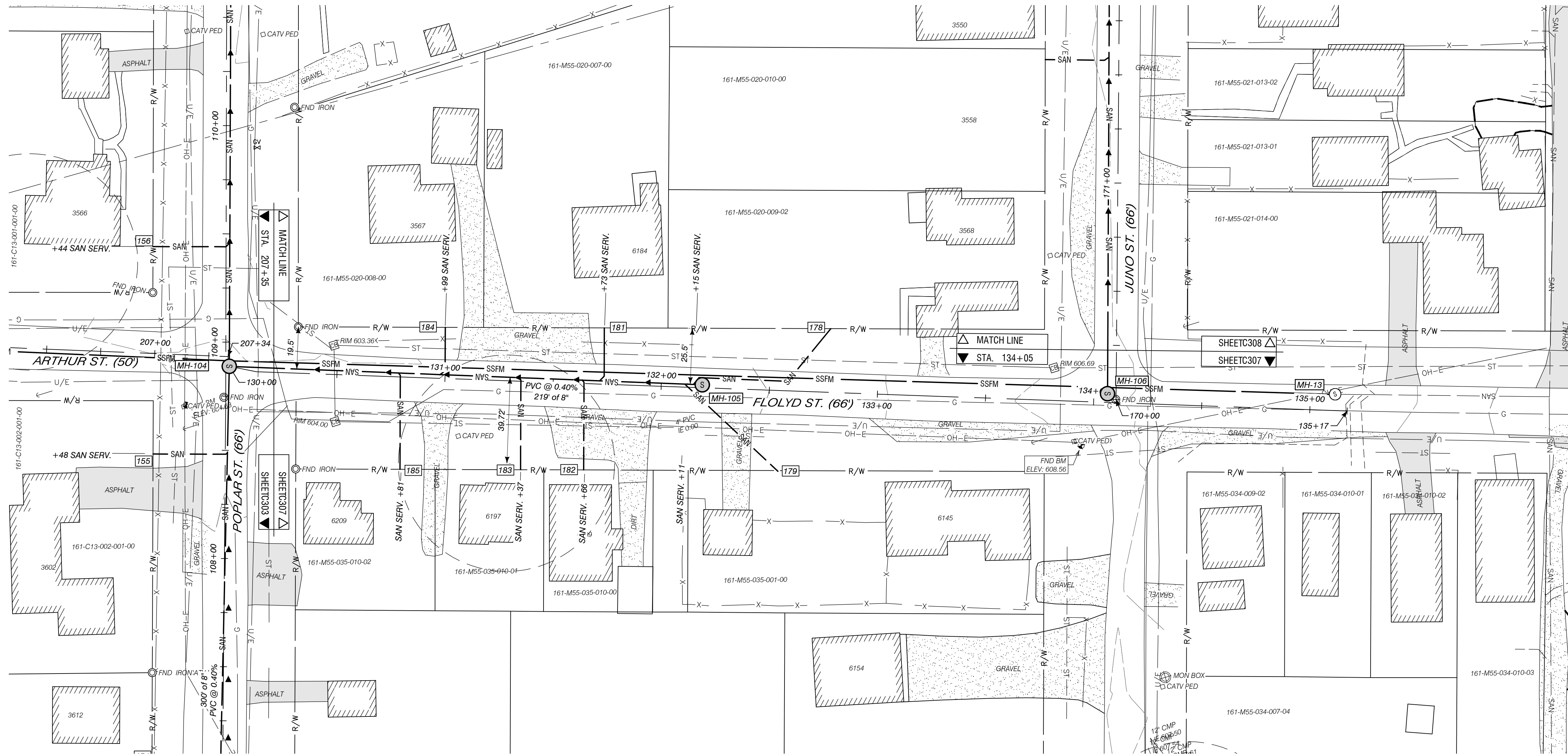


PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

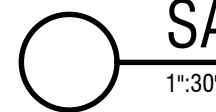
SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET
PLAN & PROFILE
STA. 114+10 TO 120+45

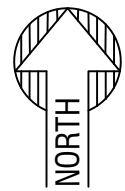
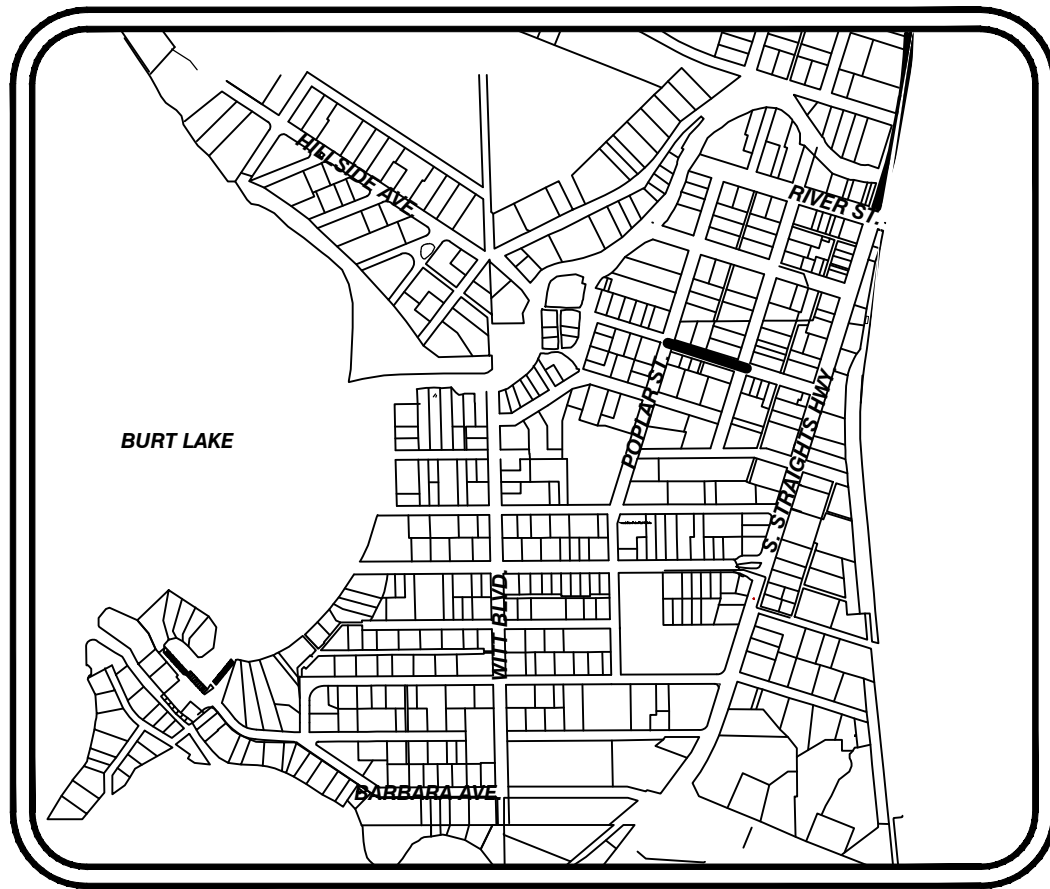
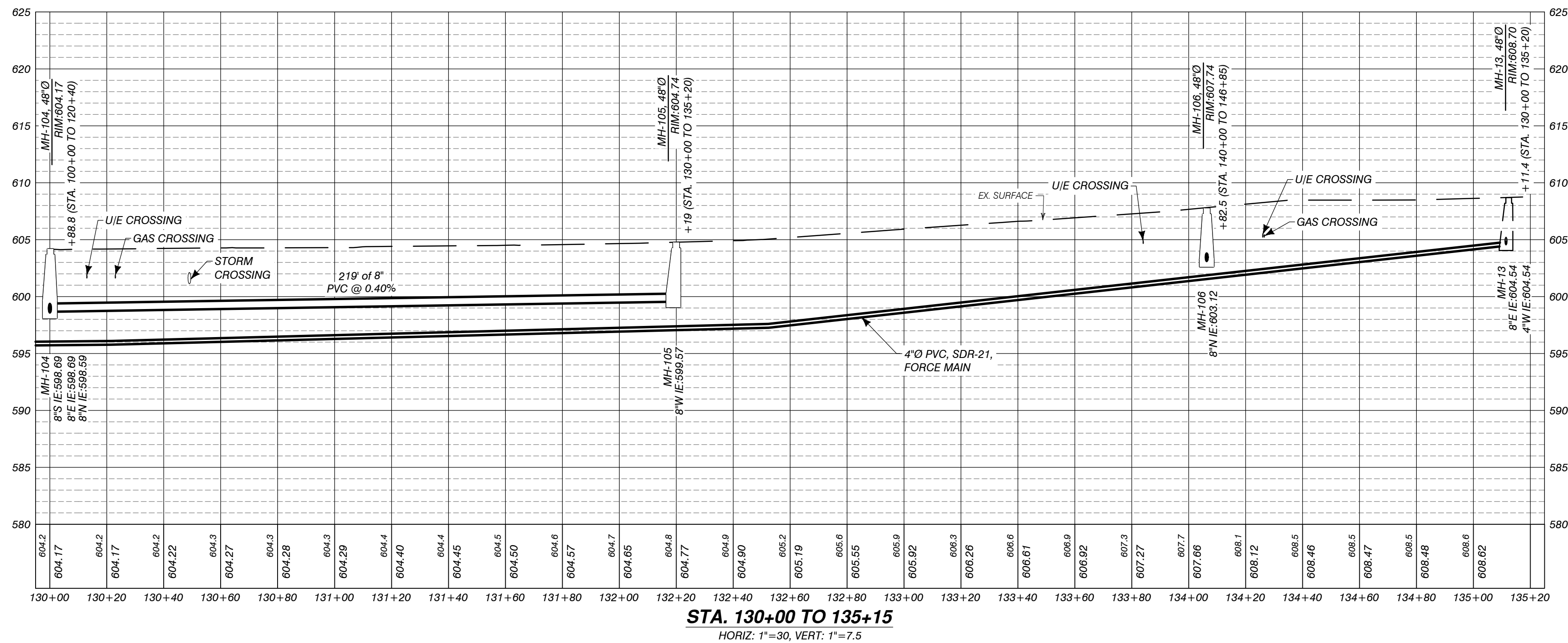
JOB NO.
22-5797
SHEET NO.
C306



SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
178	3568	133+01	132+40	-
179	6145	133+05	132+60	-
181	6184	133+44	133+44	-
182	6189	133+52	133+52	-
183	6197	133+81	133+81	-
184	3567	134+18	134+18	-
185	6209	134+37	134+37	-



SANITARY PROFILE STA. 130+00 TO 135+15



LOCATION MAP

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

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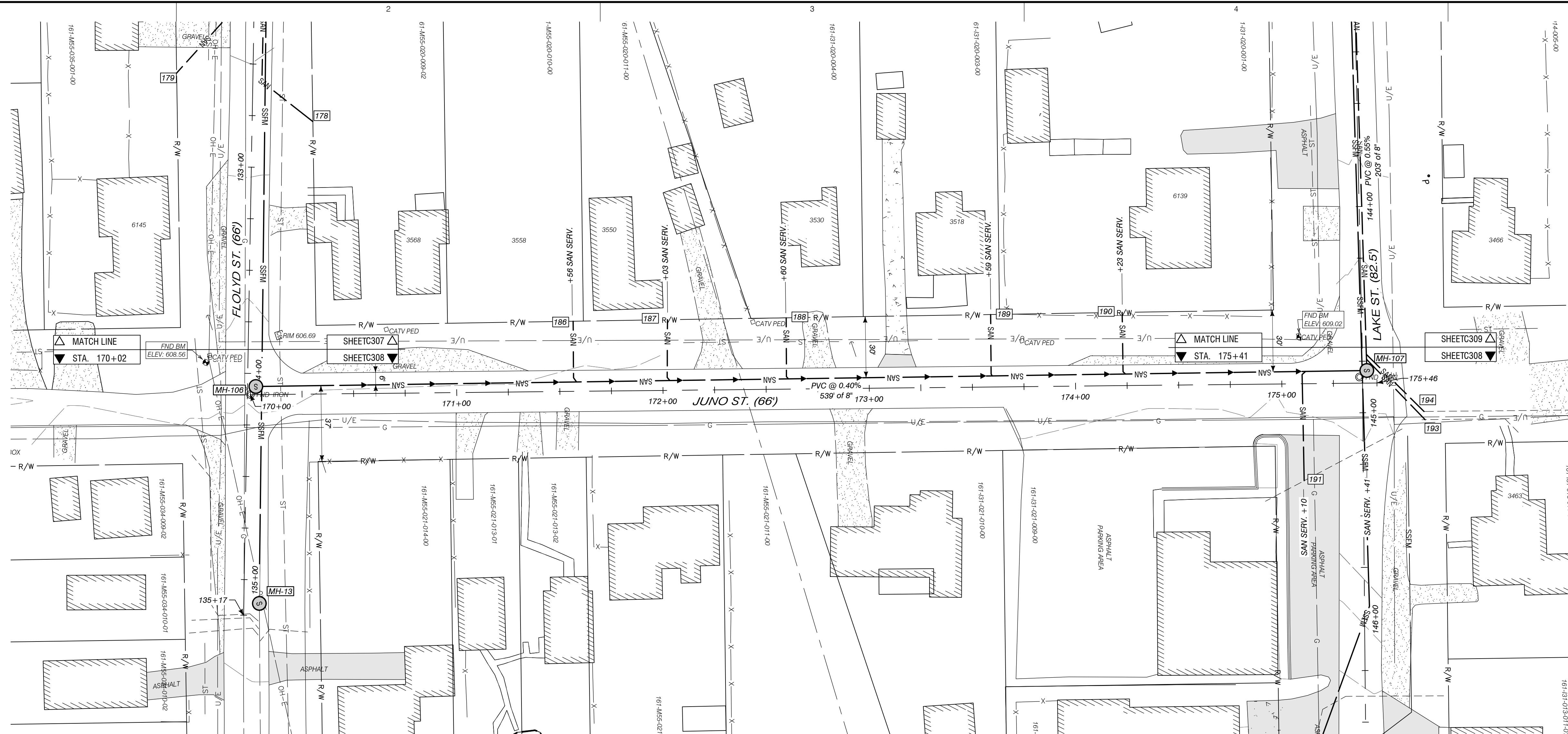
OWNER
TUSCARORA TOWNSHIP

SCALE
0 30' 60'
GRAPHIC SCALE

PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1
SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET
PLAN & PROFILE
STA. 130+00 TO 135+15

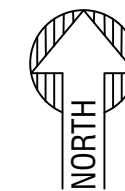
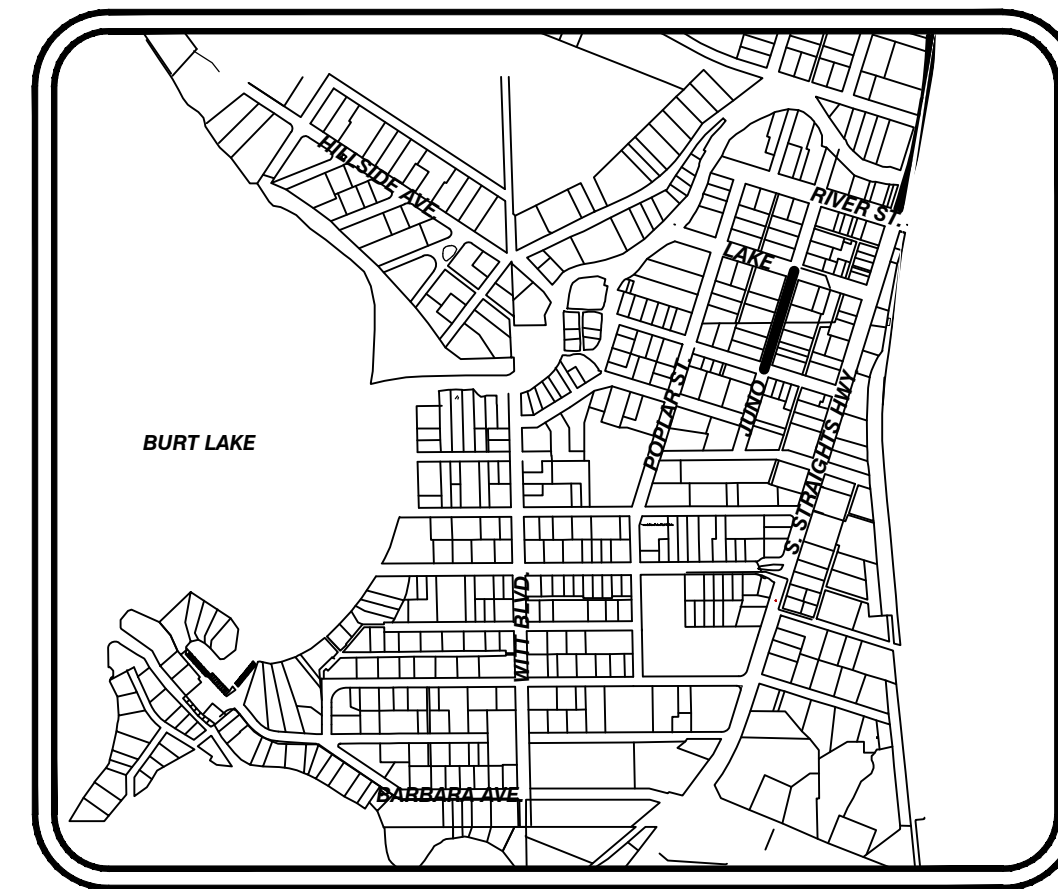
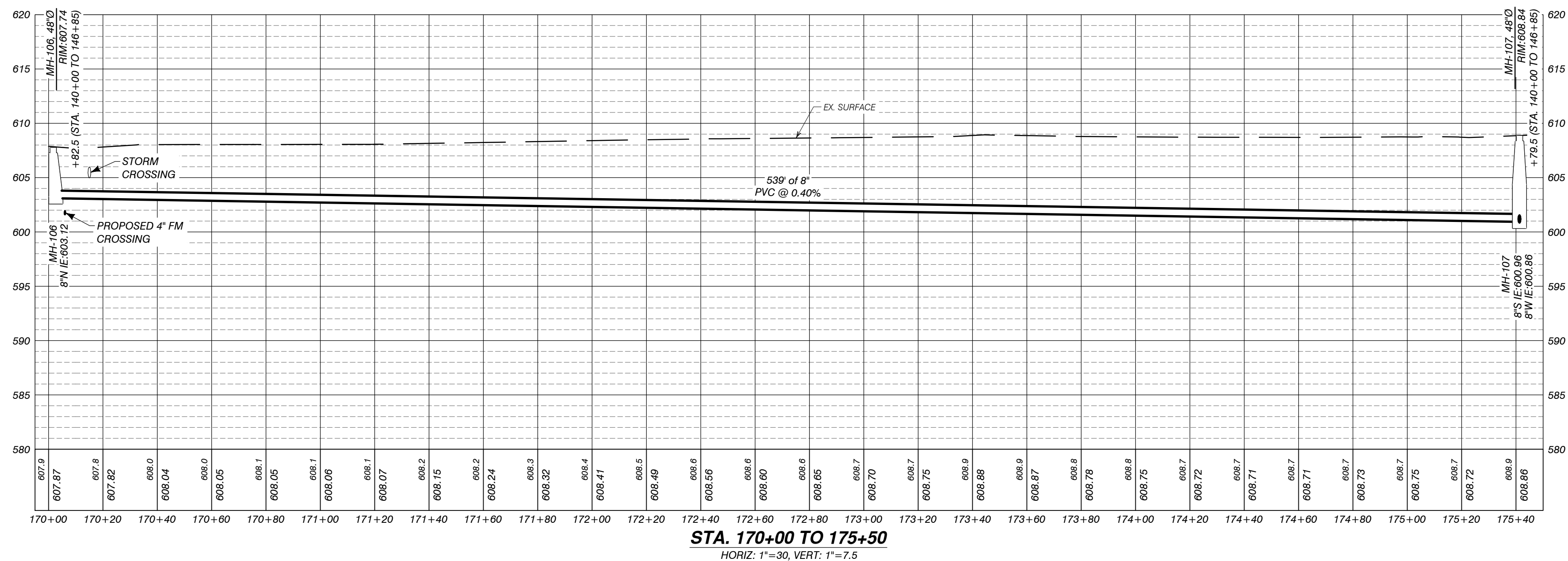
JOB NO.
22-5797
SHEET NO.
C307



SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
186	3558	171+56	171+56	-
187	3550	172+03	172+03	-
188	3530	172+60	172+60	-
189	3518	173+59	173+59	-
190	6139	174+23	174+23	-
191	6091	175+10	175+10	-



SANITARY PROFILE STA. 170+00 TO 175+50



LOCATION MAP



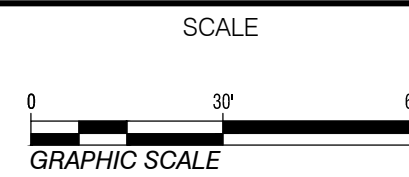
AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER

P *Performance
Engineers, Inc.*

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*TUSCARORA
TOWNSHIP*



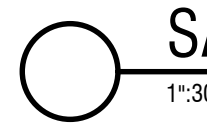
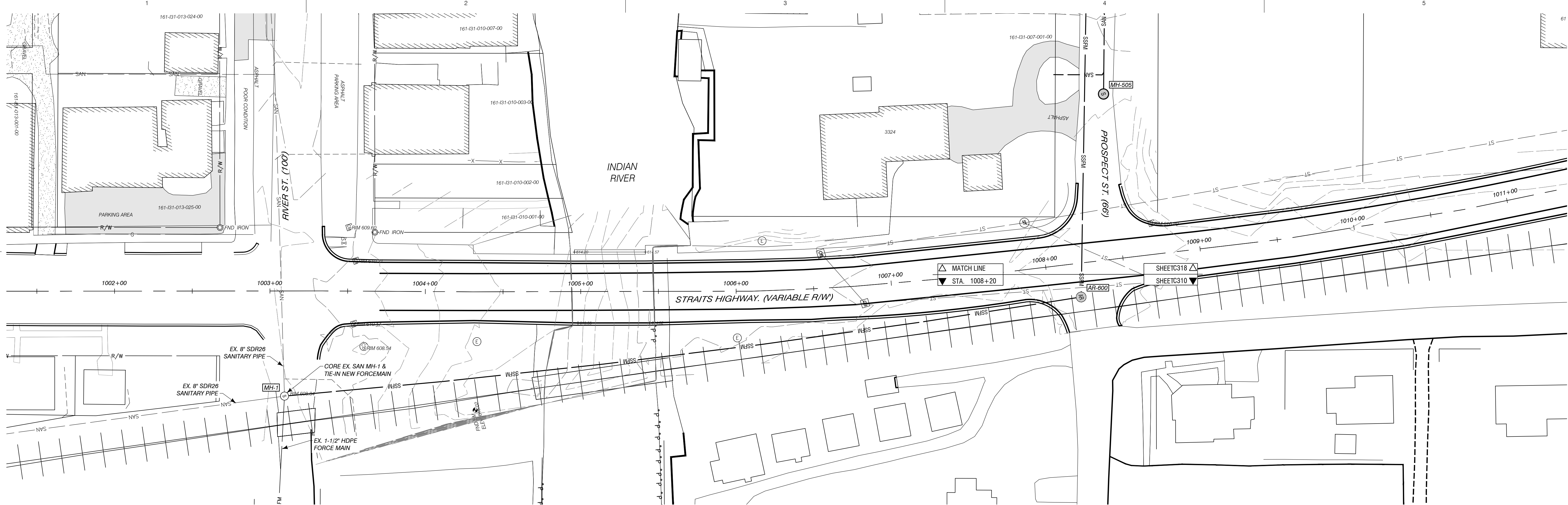
PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

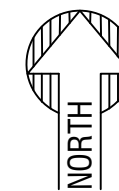
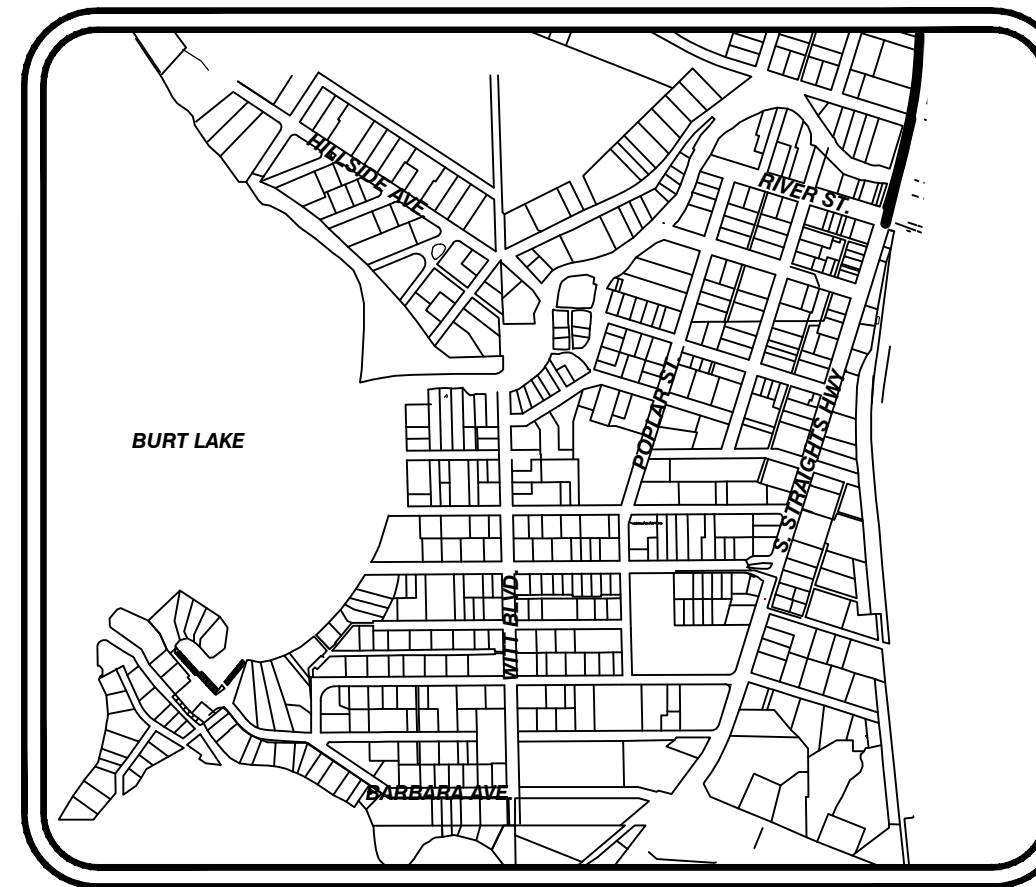
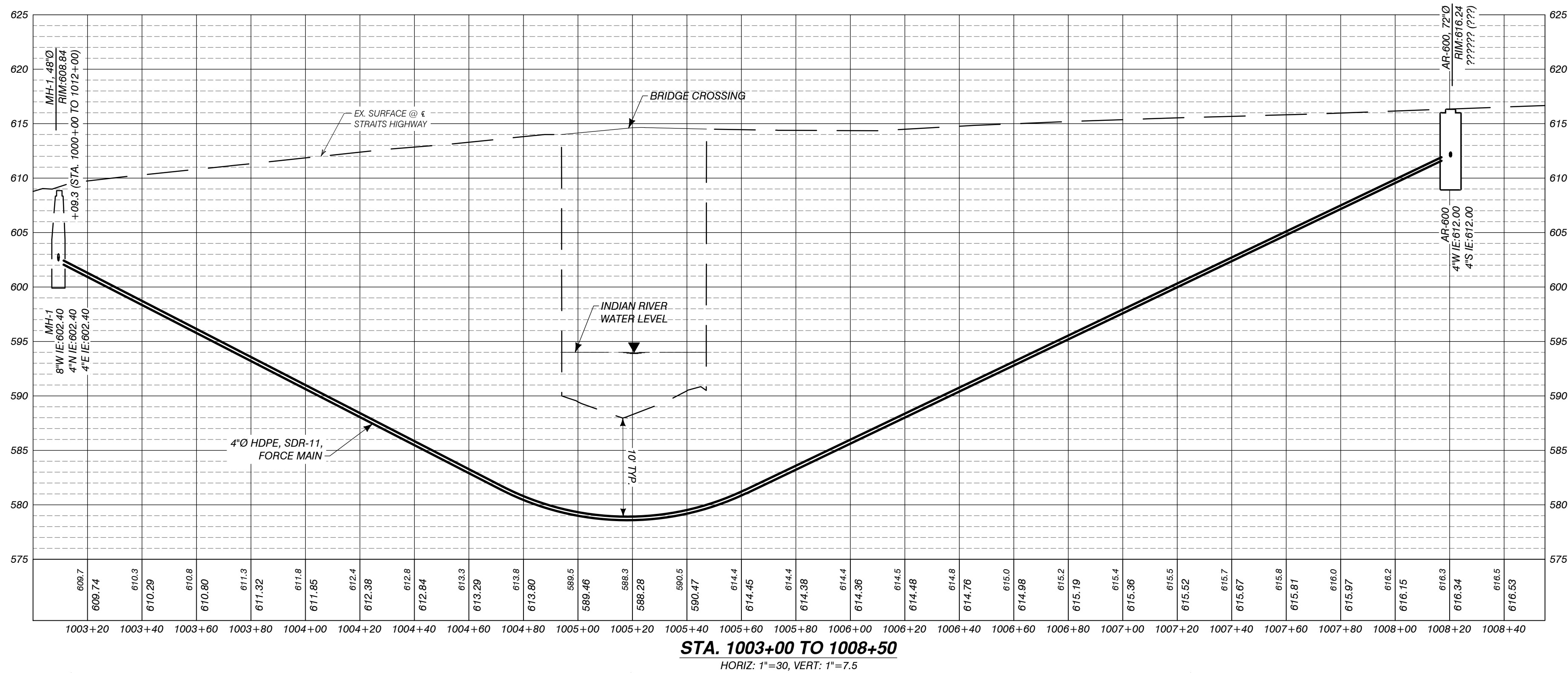
SHEET
PLAN & PROFILE
STA. 170+00 TO 175+50

JOB NO.
22-5797

SHEET NO.
C308



SANITARY PROFILE STA. 1003+00 TO 1008+50

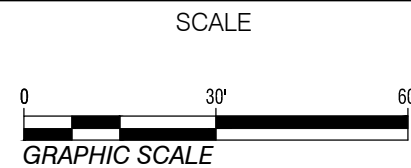


LOCATION MAP
1" = 1000'

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

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OWNER
TUSCARORA TOWNSHIP



PROJECT
**TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1**
SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET	JOB NO.
PLAN & PROFILE	22-5797
STA. 1003+00 TO 1008+50	SHEET NO.
	C310

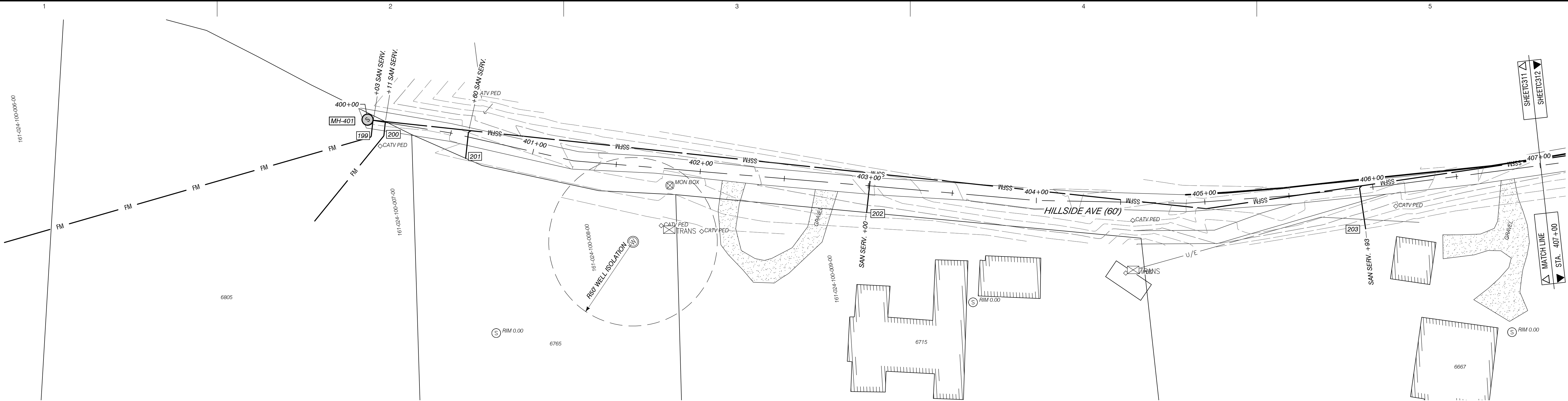
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B

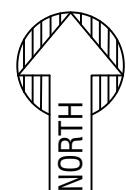
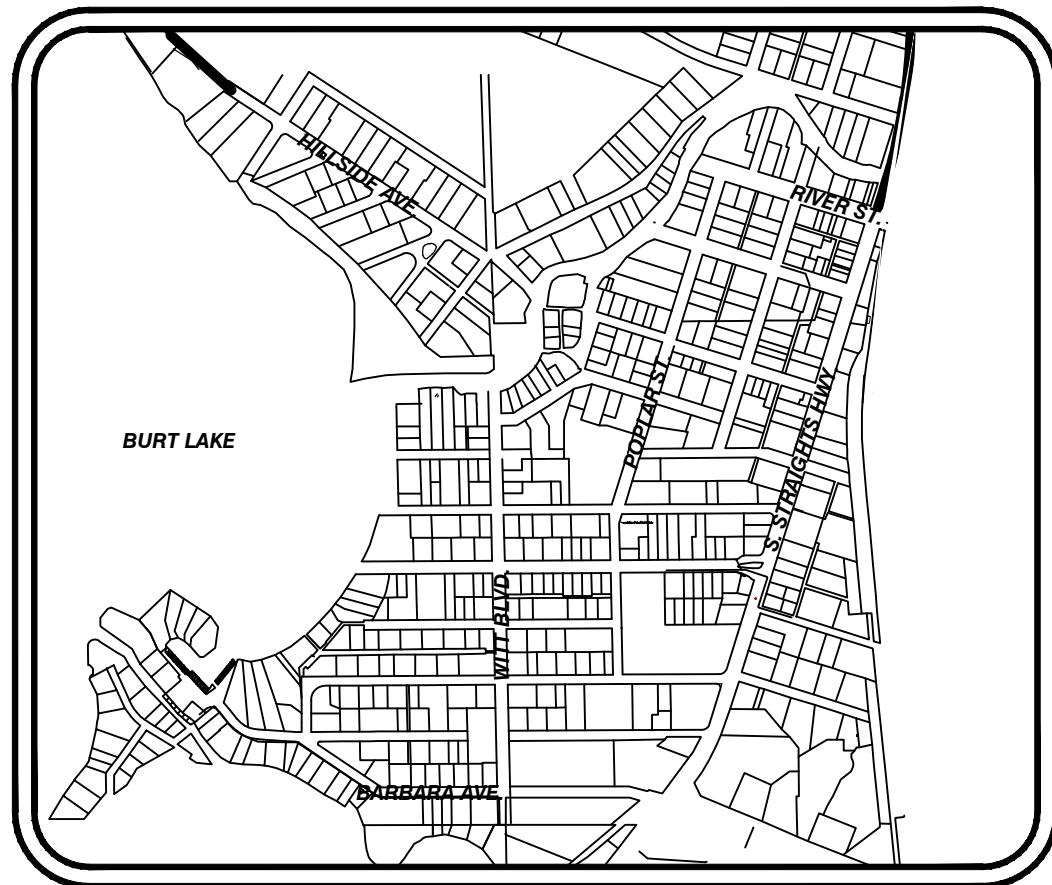
C

D

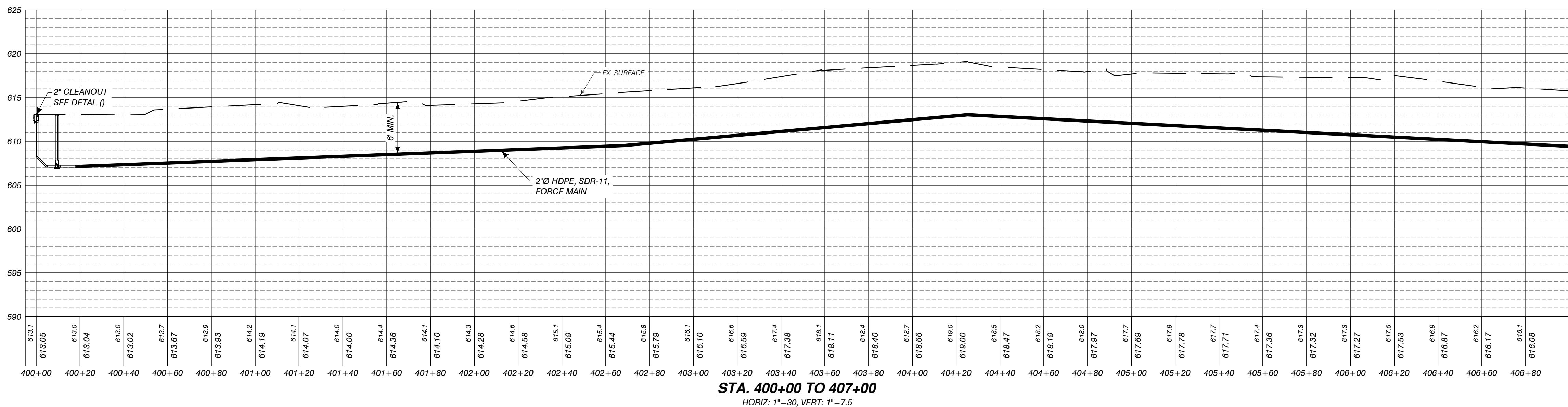
SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
199	6845	400+03	-	-
200	6805	400+11	-	-
201	6765	400+60	400+60	-
202	6715	403+00	403+00	-
203	6667	405+93	405+93	-



SANITARY PROFILE STA. 400+00 TO 407+00
1"=30'



LOCATION MAP
1"=1000'



STA. 400+00 TO 407+00
HORIZ: 1"=30, VERT: 1"=7.5

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

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Fax: (231) 547-0084
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OWNER

TUSCARORA TOWNSHIP

SCALE

0 30 60

GRAPHIC SCALE

PROJECT

**TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1**

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

**PLAN & PROFILE
STA. 400+00 TO 407+00**

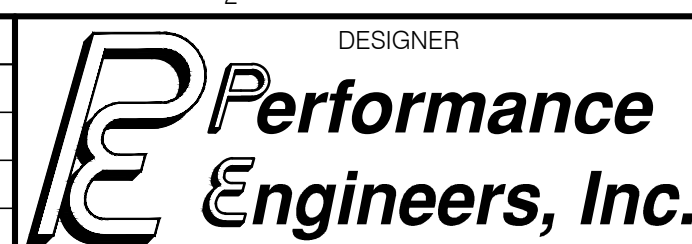
JOB NO.

22-5797

SHEET NO.

C311

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				



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Phone: (231) 547-2121
Fax: (231) 547-0084
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OWNER

TUSCARORA TOWNSHIP

SCALE

0 30' 60'

GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

PLAN & PROFILE
STA. 407+00 TO 415+00

JOB NO.

22-5797

SHEET NO.

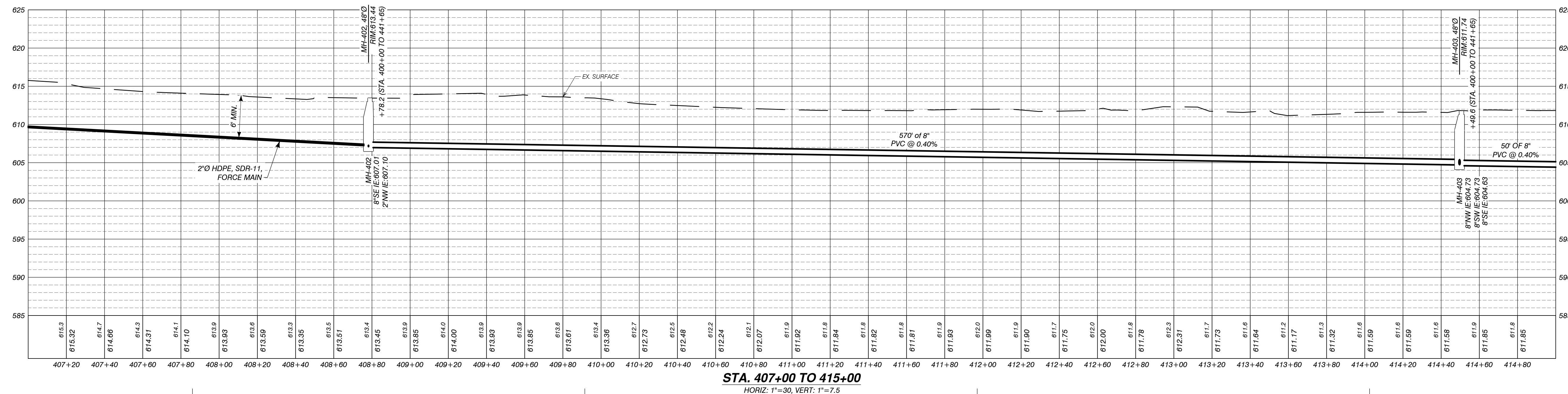
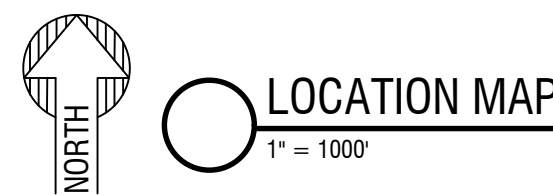
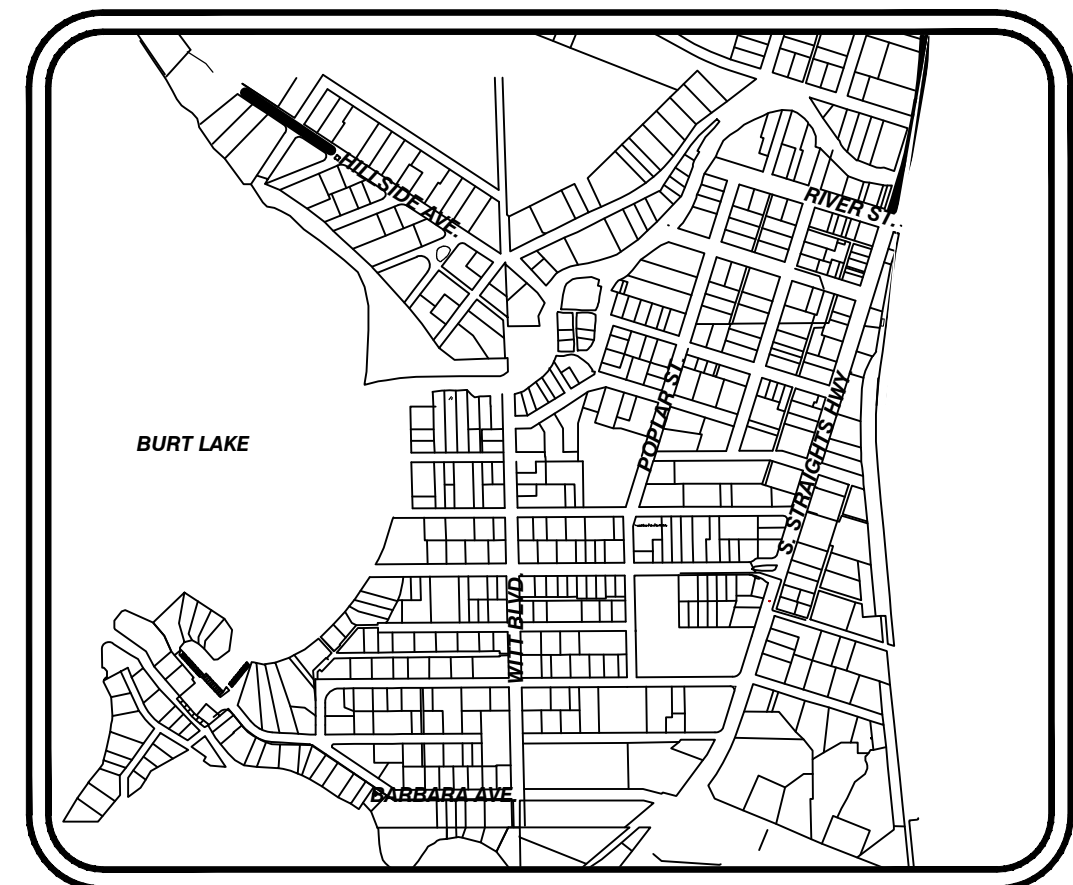
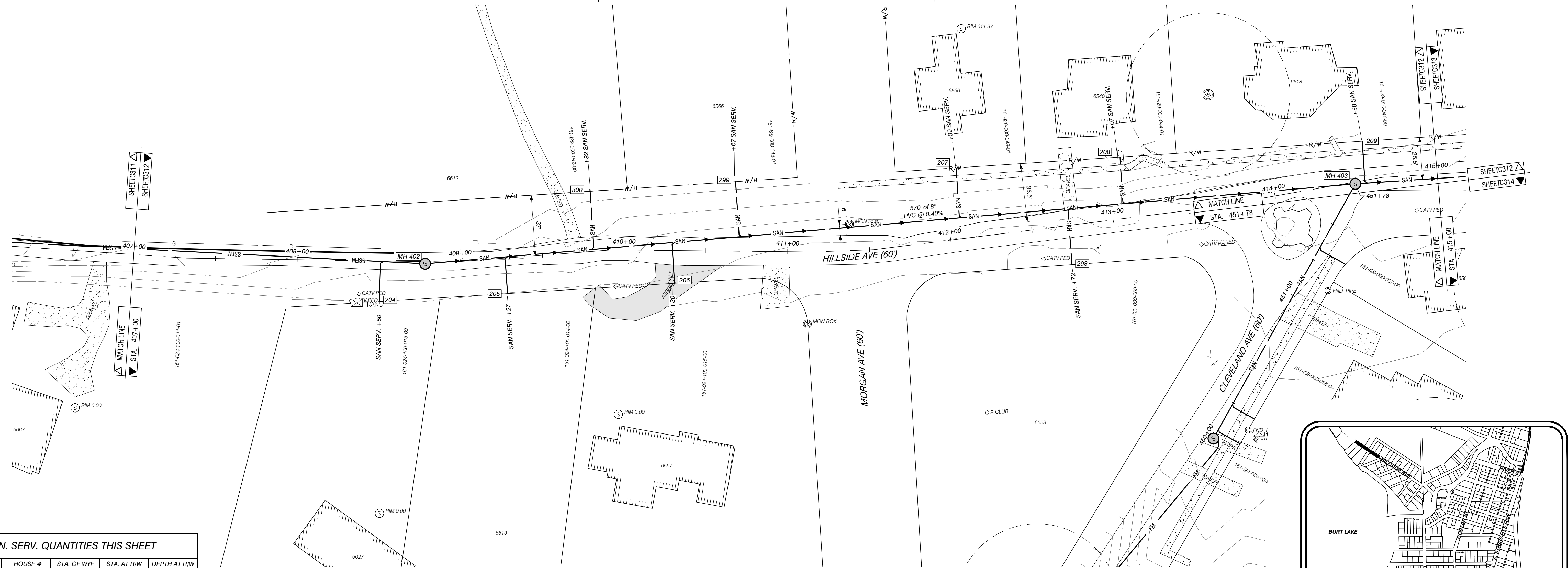
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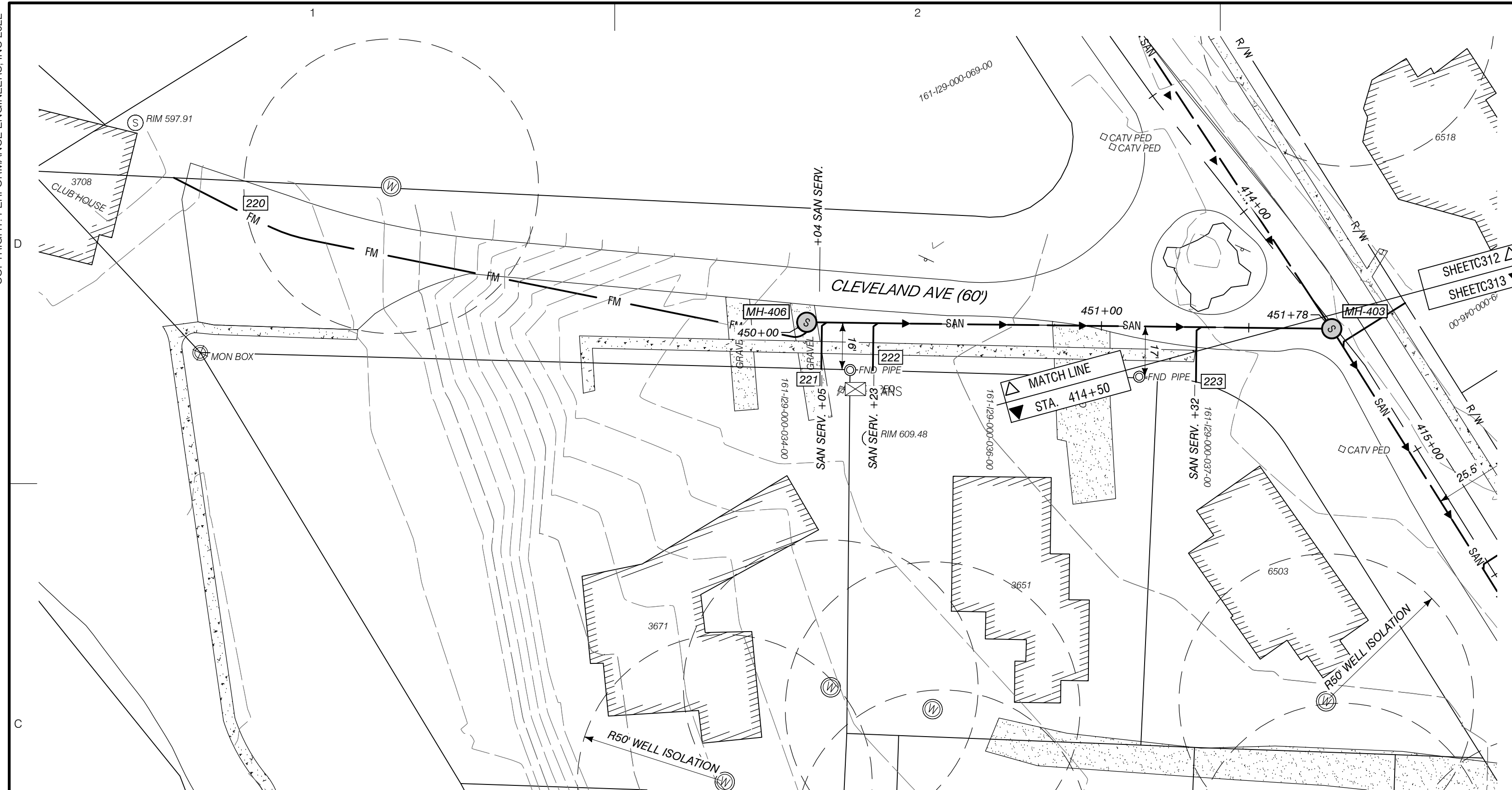
DATE

CORRECTED BY

DATE

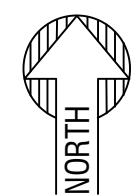
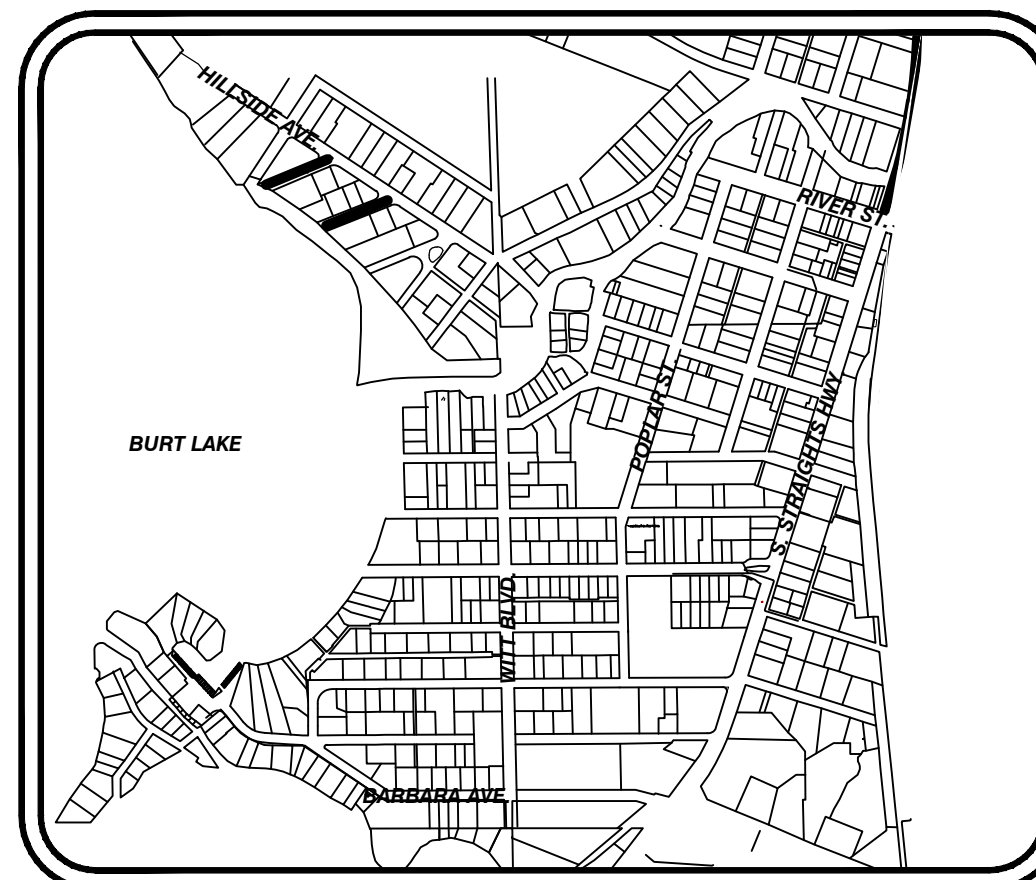
SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
204	6627	408+50	408+50	-
205	6613	409+27	409+27	-
206	6597	410+30	410+30	-
207	6566	412+09	412+09	-
208	6540	413+07	413+07	-
209	6518	414+58	414+58	-
298	6553	412+72	412+72	-
299	6566	410+67	410+67	-
300	6612	409+82	409+82	-



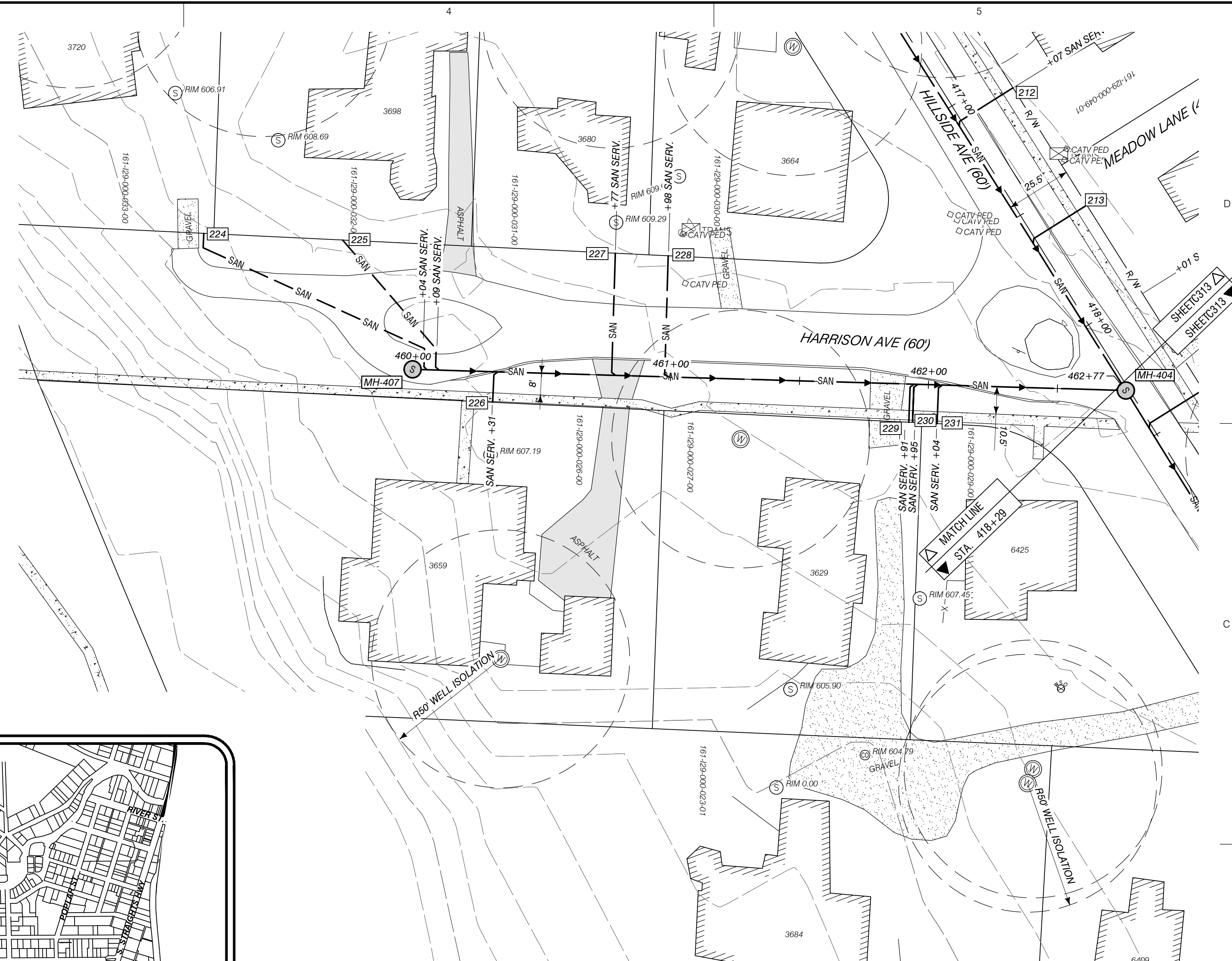
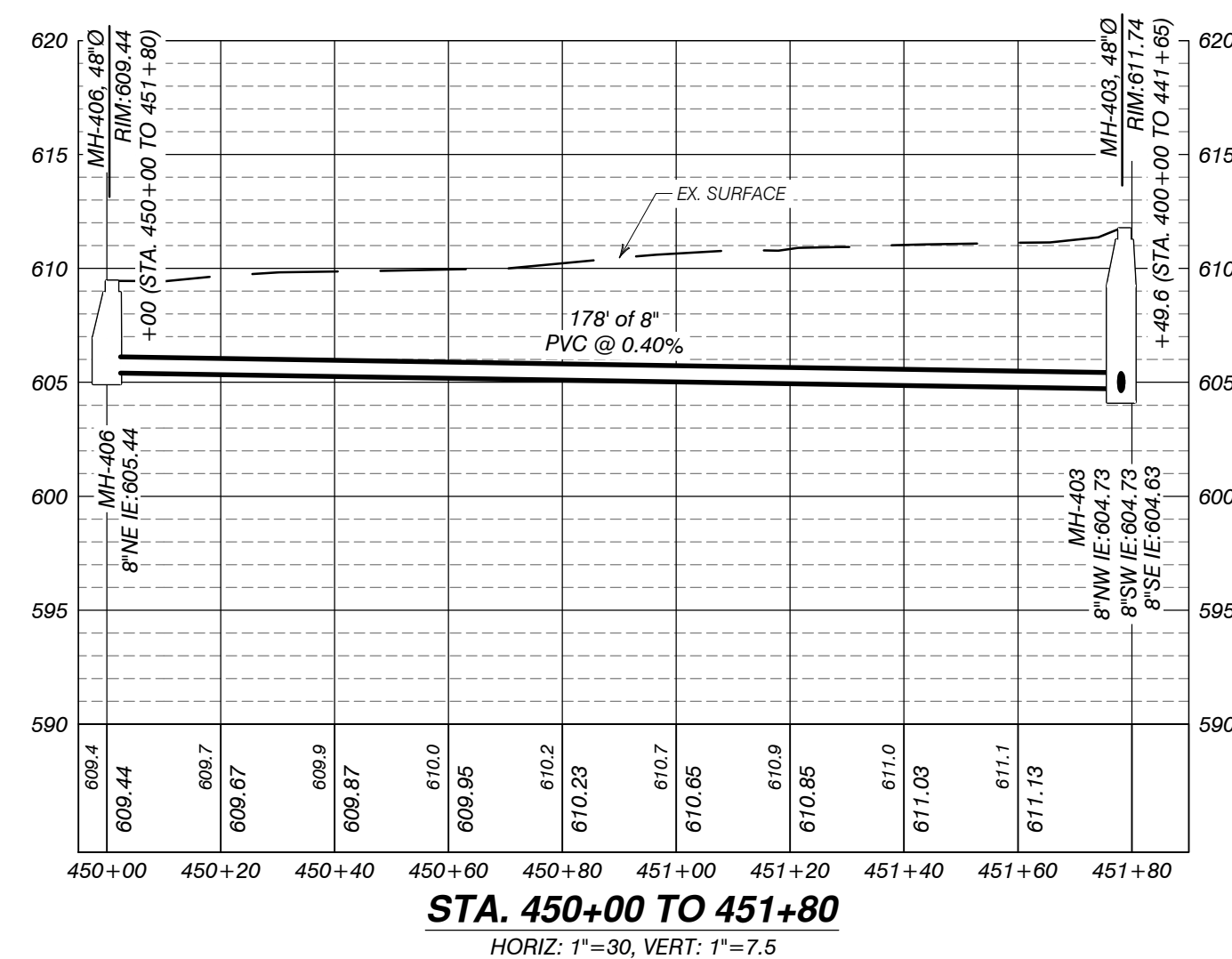


SANITARY PROFILE STA. 450+00 TO 451+80

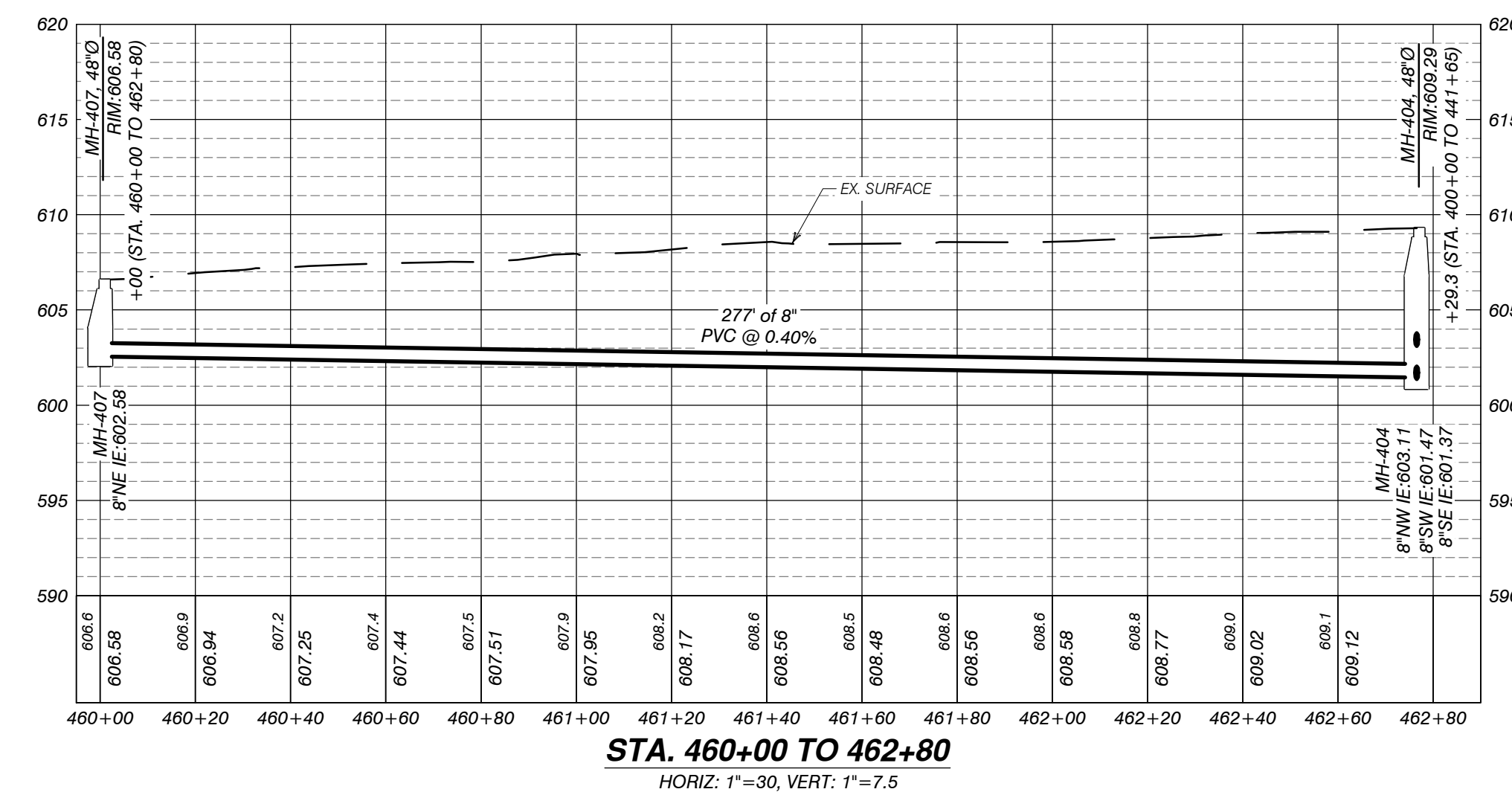
SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
220	3708	450+04	-	-
221	3671	450+05	450+05	-
222	3651	450+23	450+23	-
223	6503	451+32	451+32	-
224	3720	460+04	-	-
225	3698	460+09	-	-
226	3659	460+31	460+31	-
227	3680	460+77	460+77	-
228	3664	460+98	460+98	-
229	3629	461+91	461+91	-
230	3684	461+95	461+95	-
231	6425	462+04	462+04	-



LOCATION MAP



SANITARY PROFILE STA. 460+00 TO 462+80



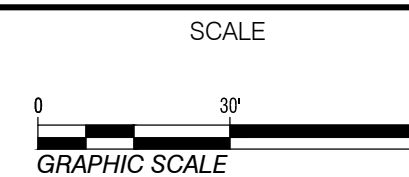
AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
pei	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER

**Performance
Engineers, Inc.**

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Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-0084
■ www.performanceeng.com**

OWNER
TUSCARORA
TOWNSHIP

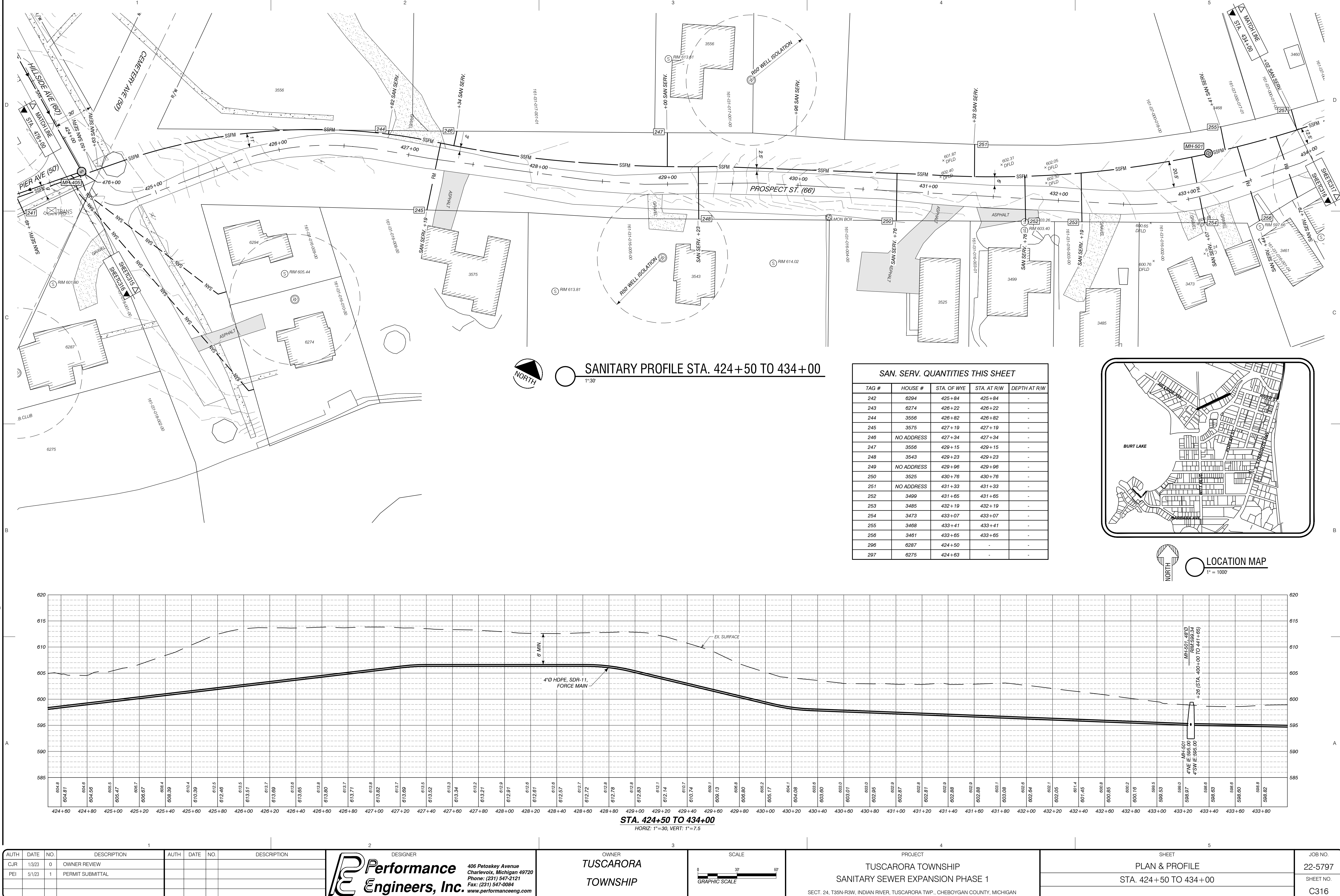


PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET
PLAN & PROFILE

JOB NO.
22-5797
SHEET NO.
C314



AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

Performance Engineers, Inc.

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Phone: (231) 547-2121
Fax: (231) 547-0084
www.performanceeng.com

OWNER

TUSCARORA TOWNSHIP

SCALE

0 30' 60'

GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

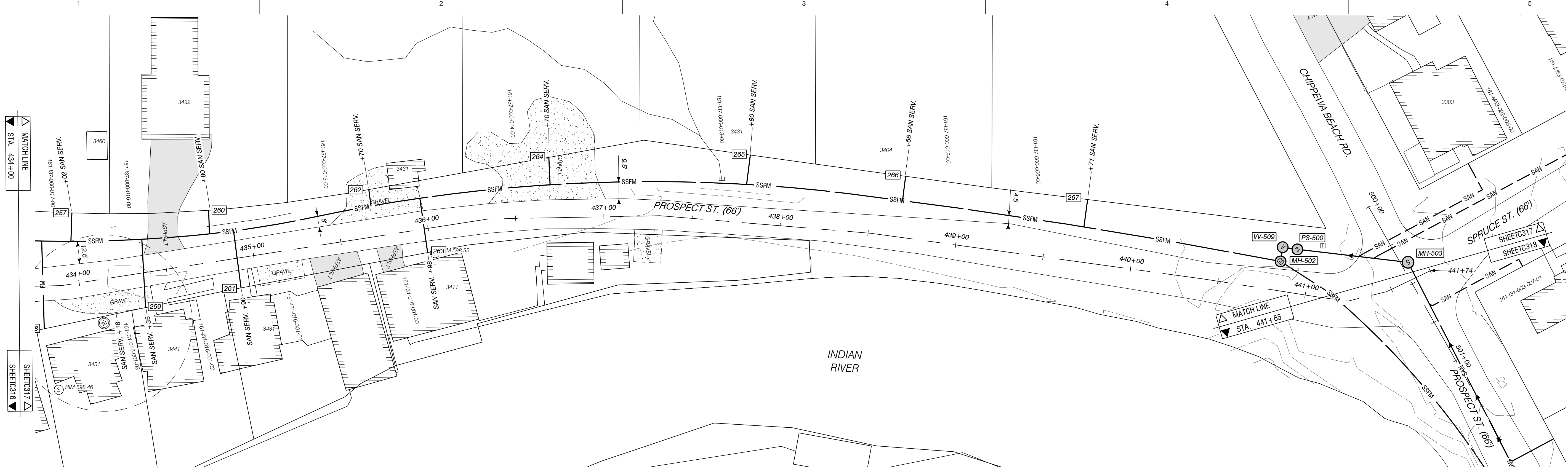
PLAN & PROFILE
STA. 424+50 TO 434+00

JOB NO.

22-5797

SHEET NO.

C316



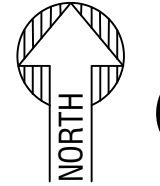
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258	3451	434+18	434+18	-
259	3441	434+35	434+35	-
260	3432	434+80	434+80	-
261	3431	434+90	434+90	-
262	3431	435+70	435+70	-
263	3411	435+86	435+86	-
264	NO ADDRESS	436+70	436+70	-
265	3431	437+80	437+80	-
266	3404	438+66	438+66	-
267	NO ADDRESS	439+71	439+71	-



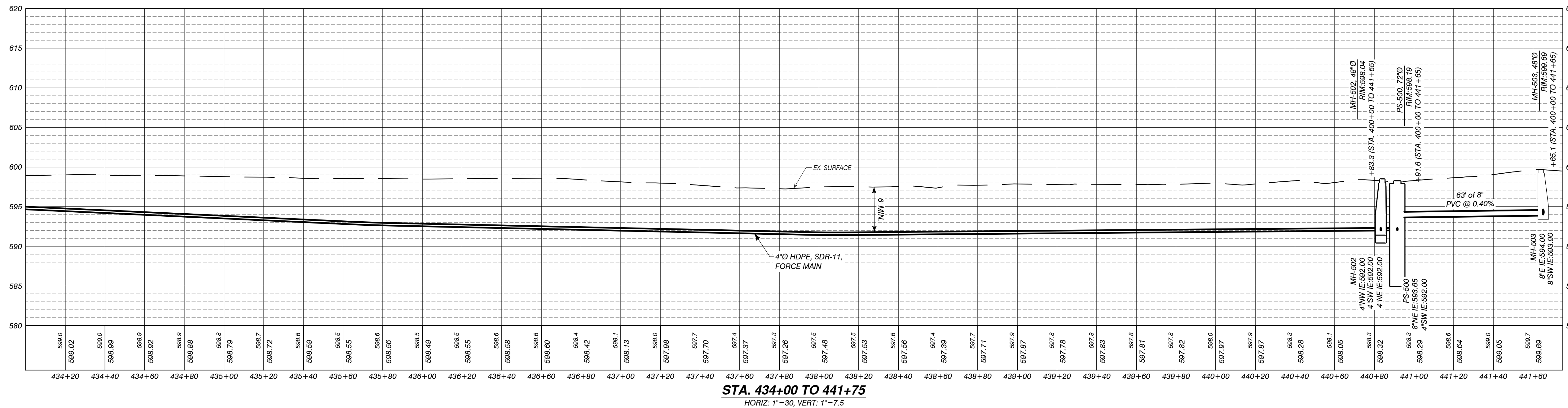
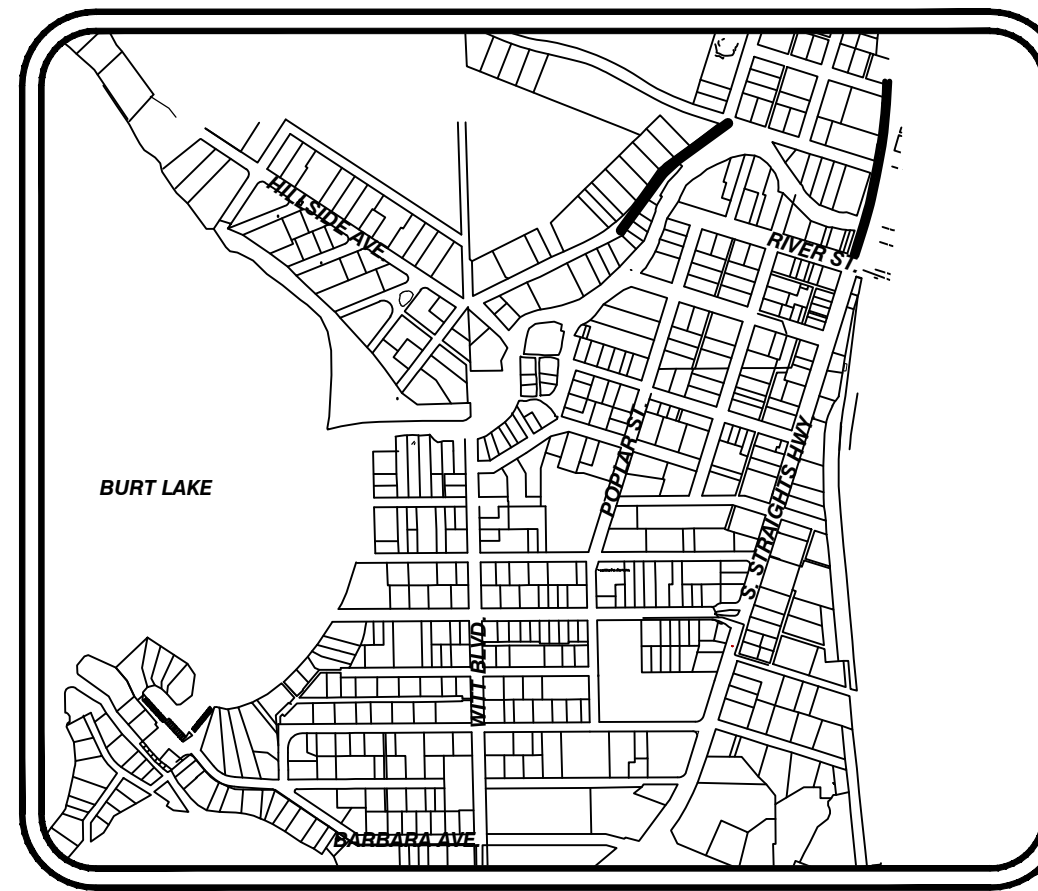
SANITARY PROFILE STA. 434+00 TO 441+75
1"=30'



PUMP STATION 500 ENLARGMENT
1"=30'



LOCATION MAP
1"= 1000'



AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER
Performance Engineers, Inc.
406 Potoskey Avenue
Charlevoix, Michigan 49720
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Fax: (231) 547-0084
www.performanceeng.com

OWNER
TUSCARORA TOWNSHIP

SCALE
0 30' 60'
GRAPHIC SCALE

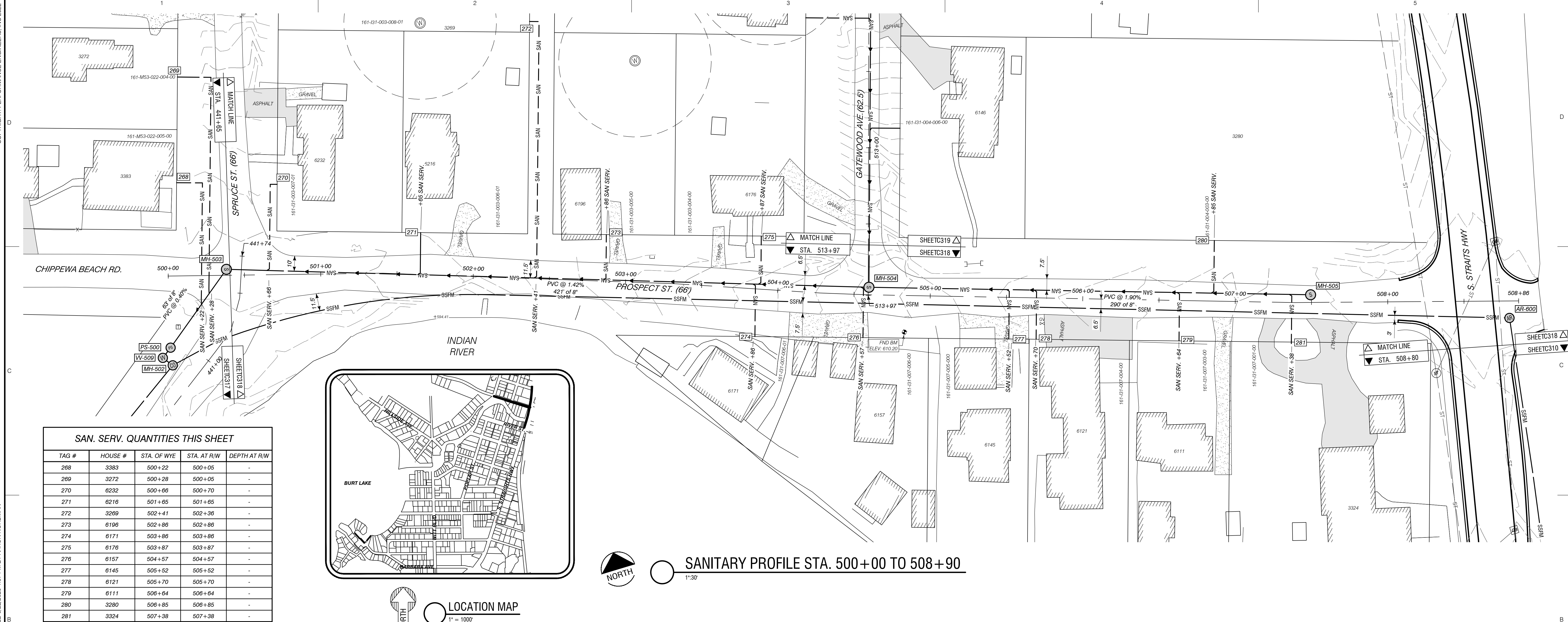
PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1
SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET
PLAN & PROFILE
STA. 434+00 TO 441+75

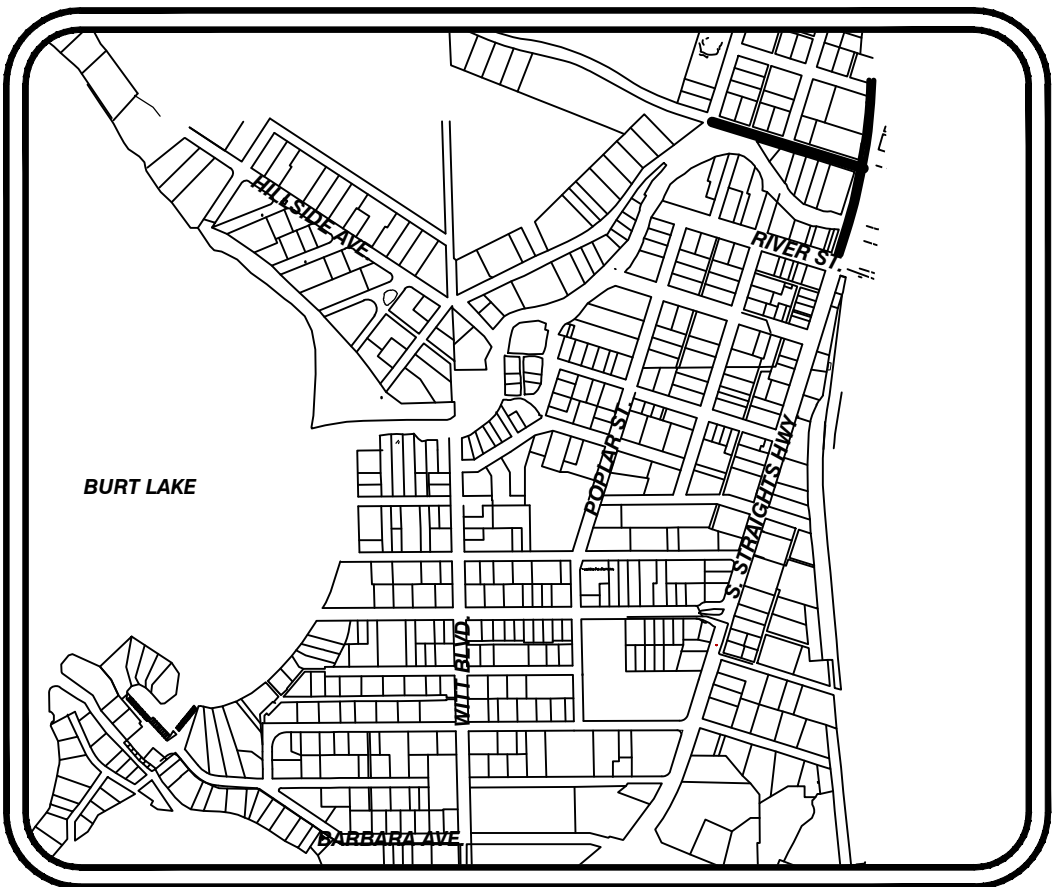
JOB NO.
22-5797
SHEET NO.
C317

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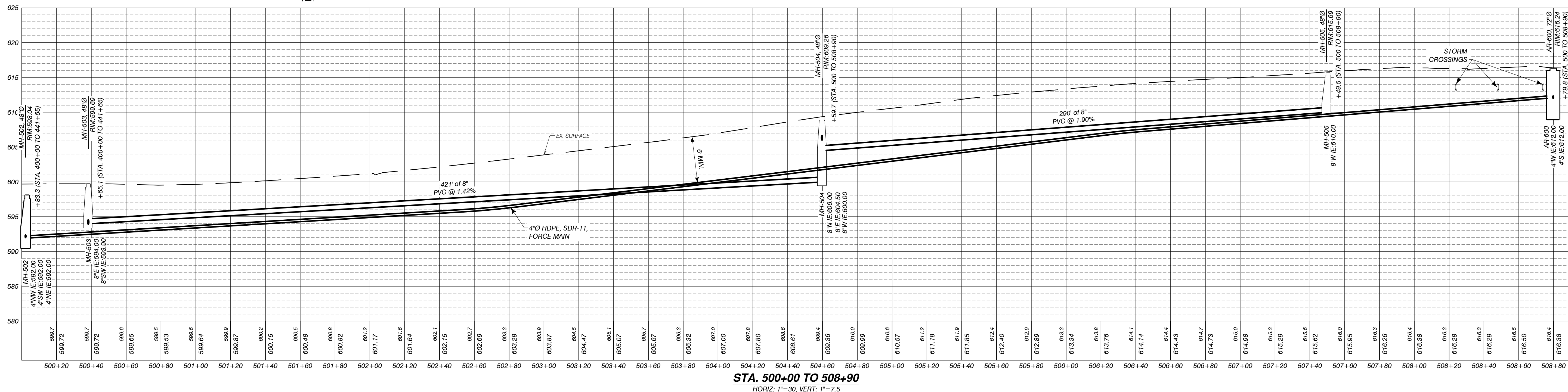
COPYRIGHT: PERFORMANCE ENGINEERS, INC. 2022



SAN. SERV. QUANTITIES THIS SHEET				
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268	3383	500+22	500+05	-
269	3272	500+28	500+05	-
270	6232	500+66	500+70	-
271	6216	501+65	501+65	-
272	3269	502+41	502+36	-
273	6196	502+86	502+86	-
274	6171	503+86	503+86	-
275	6176	503+87	503+87	-
276	6157	504+57	504+57	-
277	6145	505+52	505+52	-
278	6121	505+70	505+70	-
279	6111	506+64	506+64	-
280	3280	506+85	506+85	-
281	3324	507+38	507+38	-



SANITARY PROFILE STA. 500+00 TO 508+90
1"=30'



AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

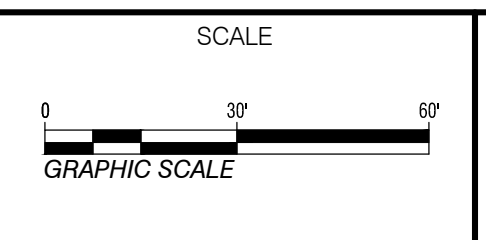
DESIGNER

Performance Engineers, Inc.

406 Potoskey Avenue
Charlevoix, Michigan 49720
Phone: (231) 547-2121
Fax: (231) 547-0084
www.performanceeng.com

OWNER

TUSCARORA TOWNSHIP



PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

PLAN & PROFILE
STA. 500+00 TO 508+90

JOB NO.

22-5797

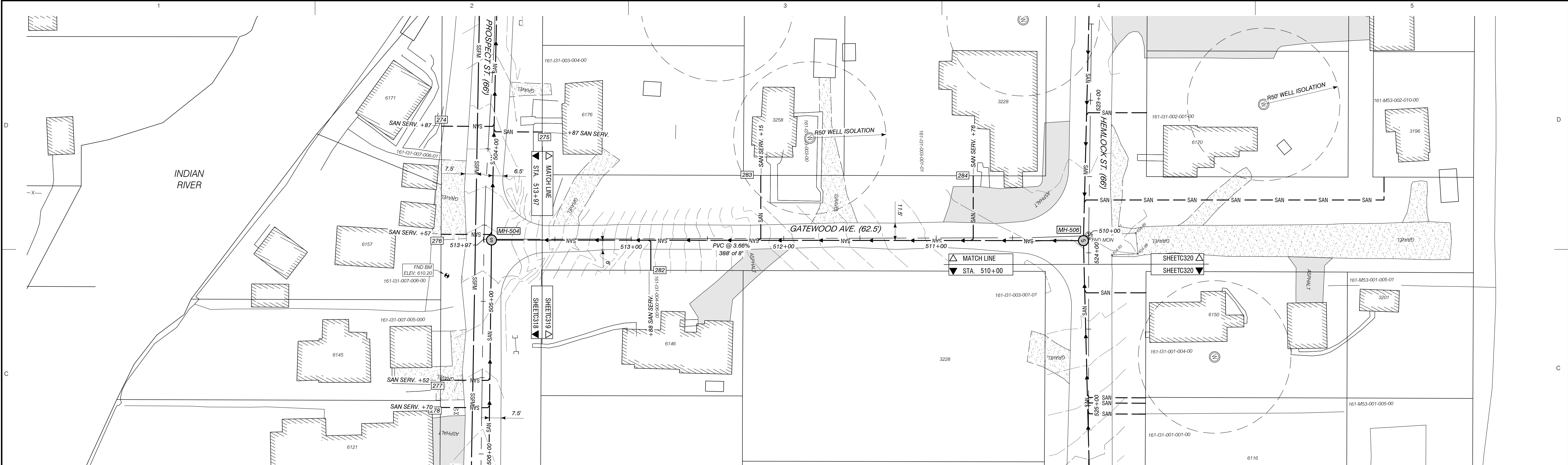
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C318

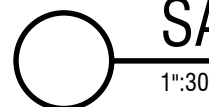
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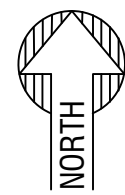
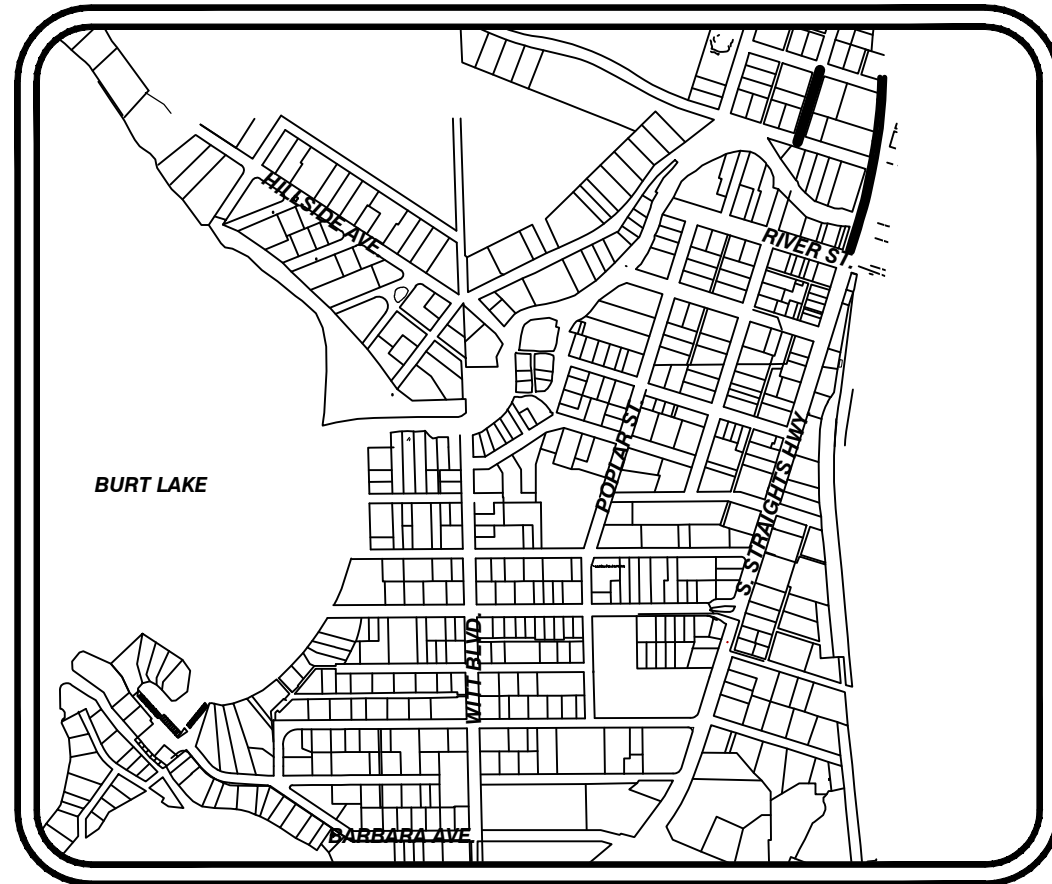
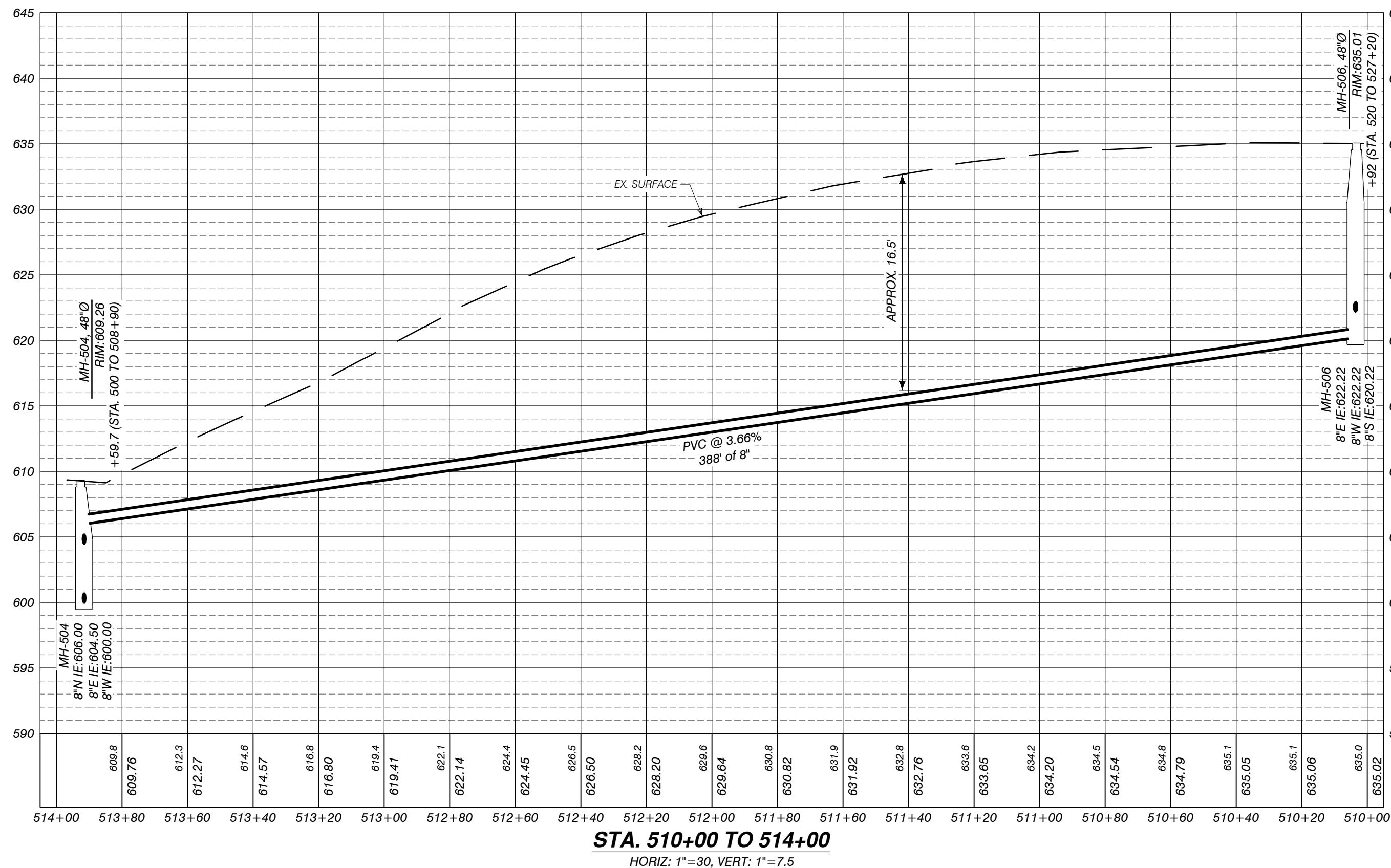
COPYRIGHT: PERFORMANCE ENGINEERS, INC 2022



SAN. SERV. QUANTITIES THIS SHEET				
TAG #	HOUSE #	STA. OF WYE	STA. AT R/W	DEPTH AT R/W
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283	3258	512+15	512+15	
284	3228	510+76	510+76	



SANITARY PROFILE STA. 510+00 TO 514+00



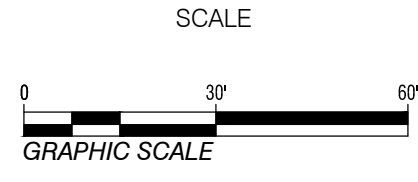
LOCATION MAP

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				



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Performance Engineers, Inc.
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www.performanceeng.com

OWNER
TUSCARORA TOWNSHIP



PROJECT
**TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1**

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET
**PLAN & PROFILE
STA. 510+00 TO 514+00**

JOB NO.
22-5797
SHEET NO.
C319

FILE NAME: C319_5797 PLAN.DWG

DRAWN BY: A

DATE: -

CHECKED BY: -

DATE: -

C

DATE: -

D

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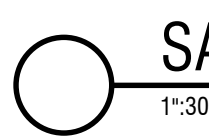
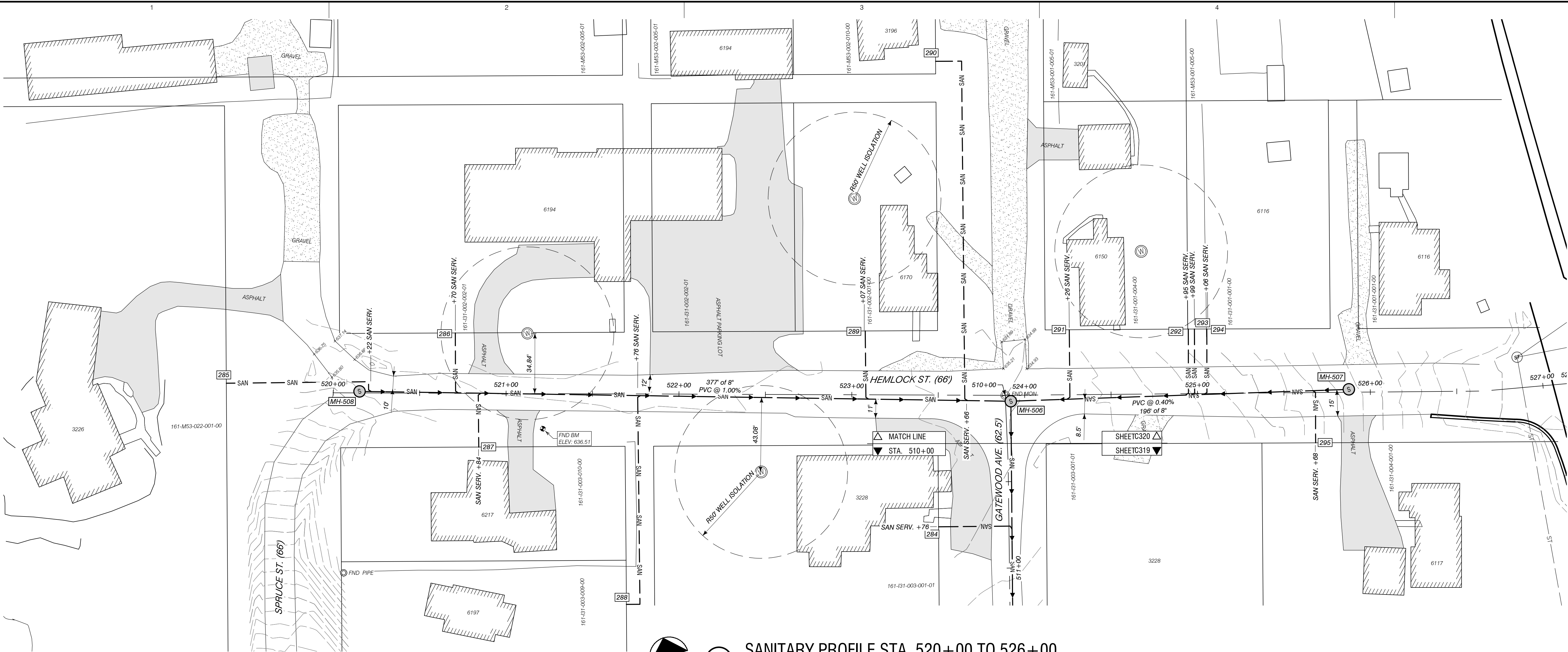
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D

C

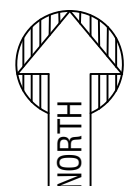
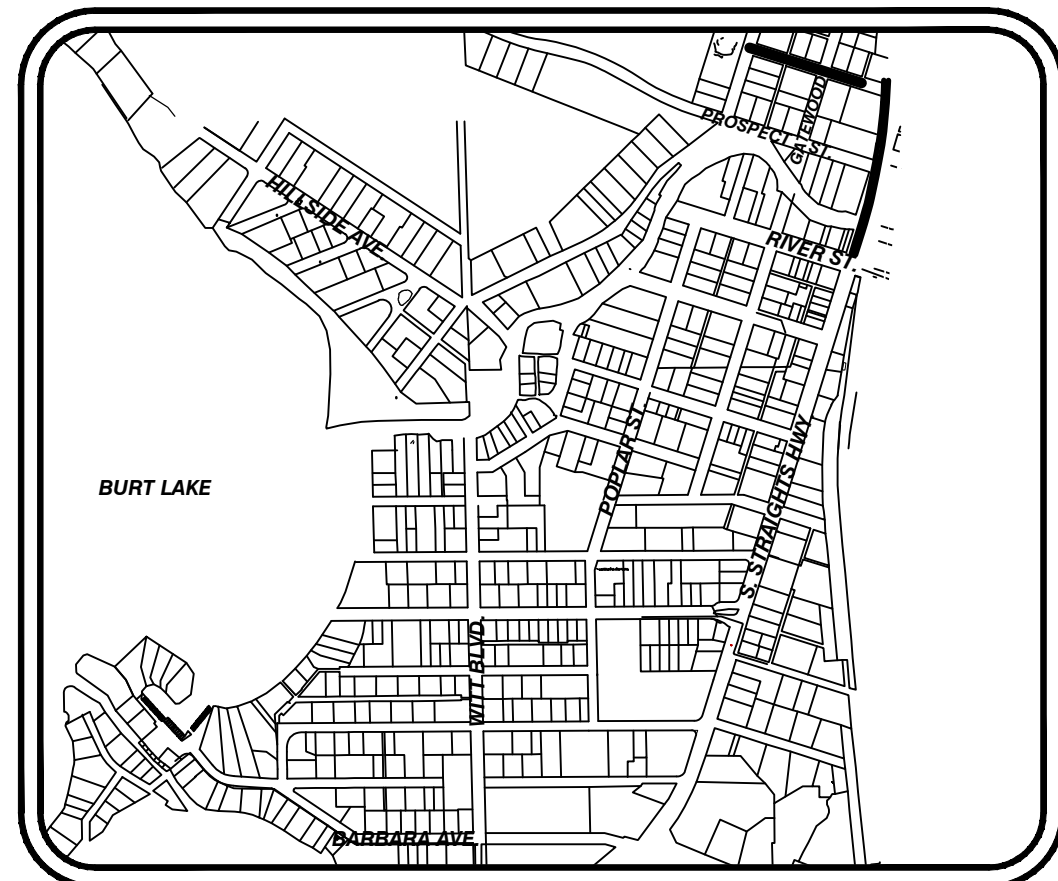
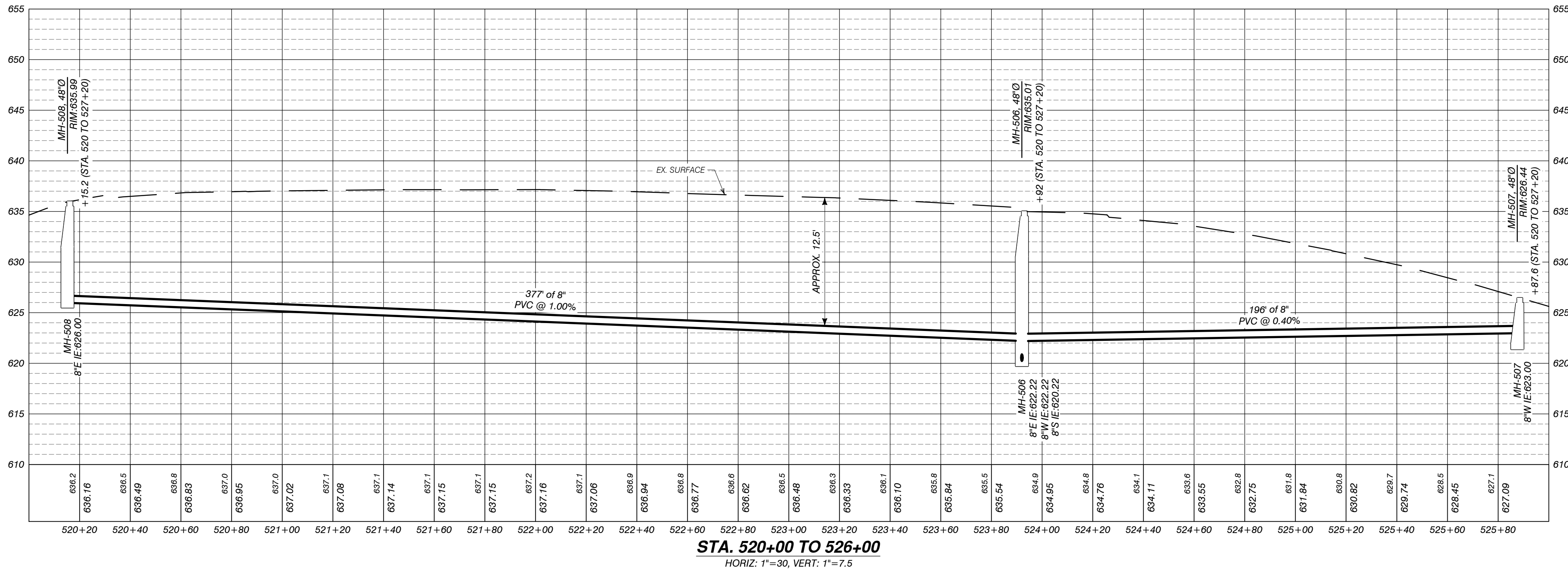
B

A



SANITARY PROFILE STA. 520+00 TO 526+00

SAN. SERV. QUANTITIES THIS SHEET				
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285	3226	520+22	-----	
286	6194	520+70	520+70	
287	6217	520+84	520+84	
288	6197	521+76	521+68	
289	6170	523+07	523+07	
290	3196	523+66	523+50	
291	6150	524+26	524+26	
292	3201	524+95	524+95	
293	NO ADDRESS	524+99	524+99	
294	6116	525+06	525+06	
295	6117	525+89	525+89	

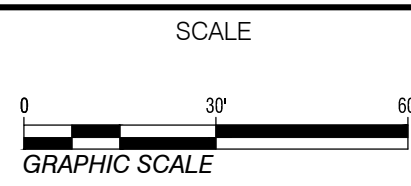


LOCATION MAP

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				

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Performance Engineers, Inc.
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Fax: (231) 547-0084
www.performanceeng.com

OWNER
TUSCARORA TOWNSHIP



PROJECT
TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET
PLAN & PROFILE
STA. 520+00 TO 526+00

JOB NO.
22-5797
SHEET NO.
C320

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DRAWN BY:

DATE:

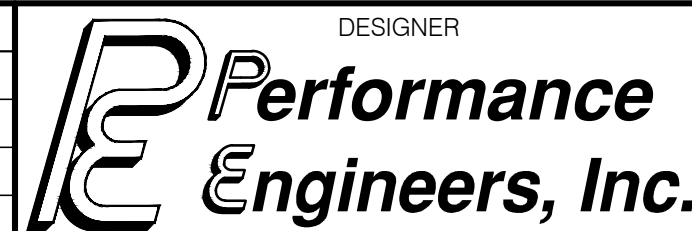
CHECKED BY:

DATE:

CORRECTED BY:

DATE:

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
CJR	1/3/23	0	OWNER REVIEW				
PEI	5/1/23	1	PERMIT SUBMITTAL				



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OWNER

TUSCARORA TOWNSHIP

SCALE

0 30' 60'

GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP

SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

PLAN & PROFILE

STA. 210+00 TO 212+20

STA. 220+00 TO 222+30 & 230+00 TO 232+05

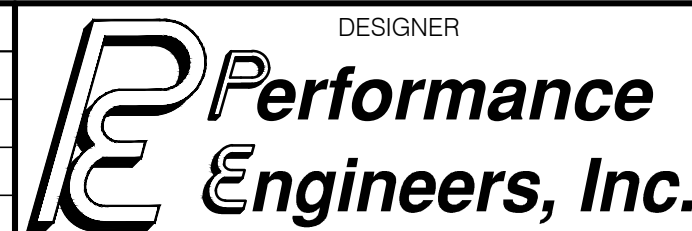
JOB NO.

22-5797

SHEET NO.

C321

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
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PEI	5/1/23	1	PERMIT SUBMITTAL				



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OWNER

TUSCARORA TOWNSHIP

SCALE

0 30' 60'

GRAPHIC SCALE

PROJECT

TUSCARORA TOWNSHIP

SANITARY SEWER EXPANSION PHASE 1

SECT. 24, T35N-R3W, INDIAN RIVER, TUSCARORA TWP., CHEBOYGAN COUNTY, MICHIGAN

SHEET

PLAN & PROFILE

STA. 210+00 TO 212+20

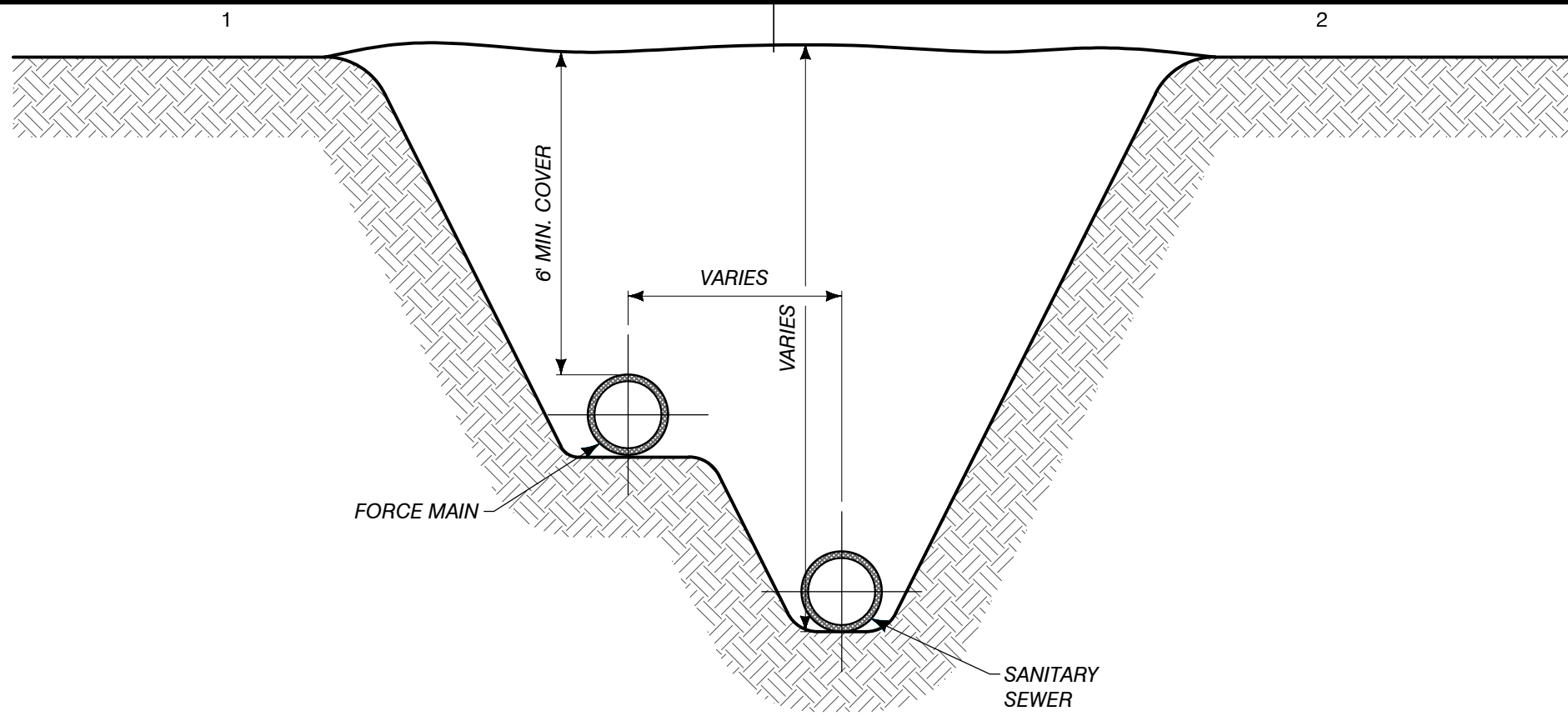
STA. 220+00 TO 222+30 & 230+00 TO 232+05

JOB NO.

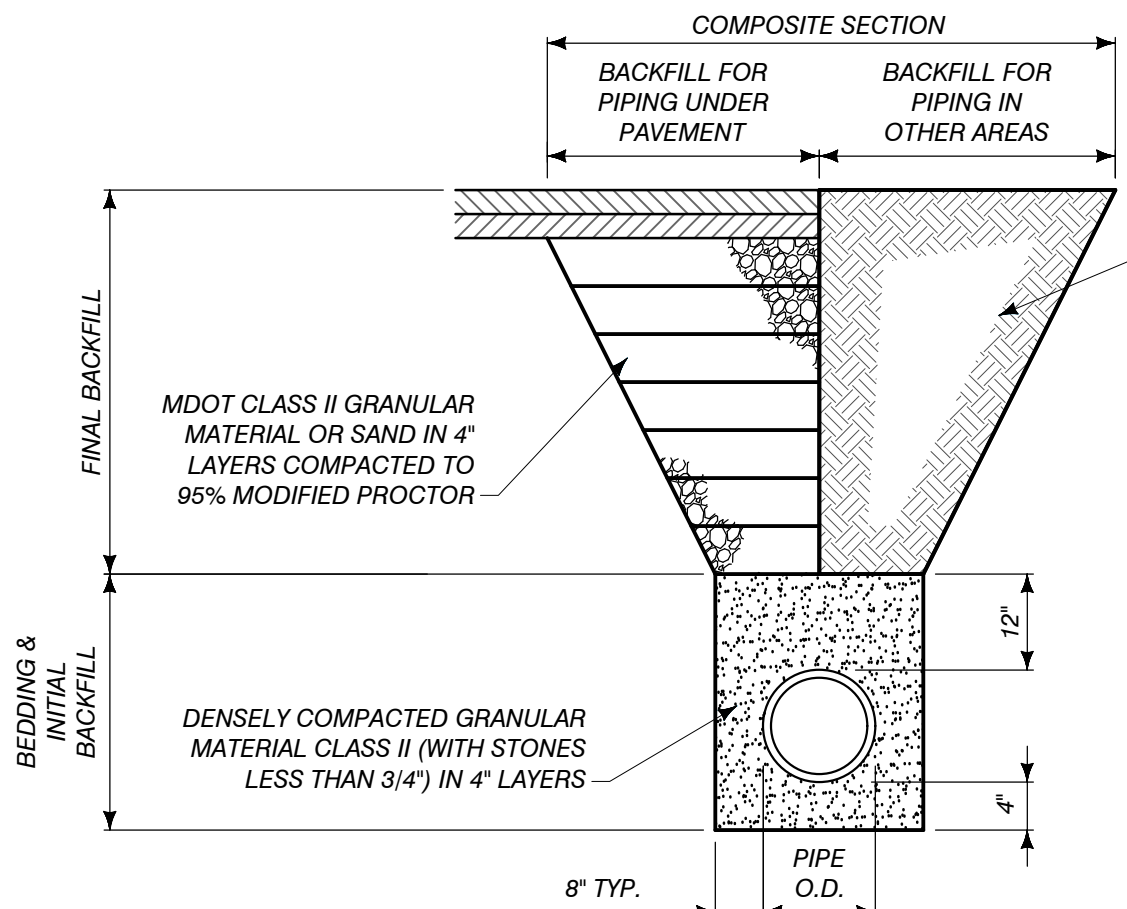
22-5797

SHEET NO.

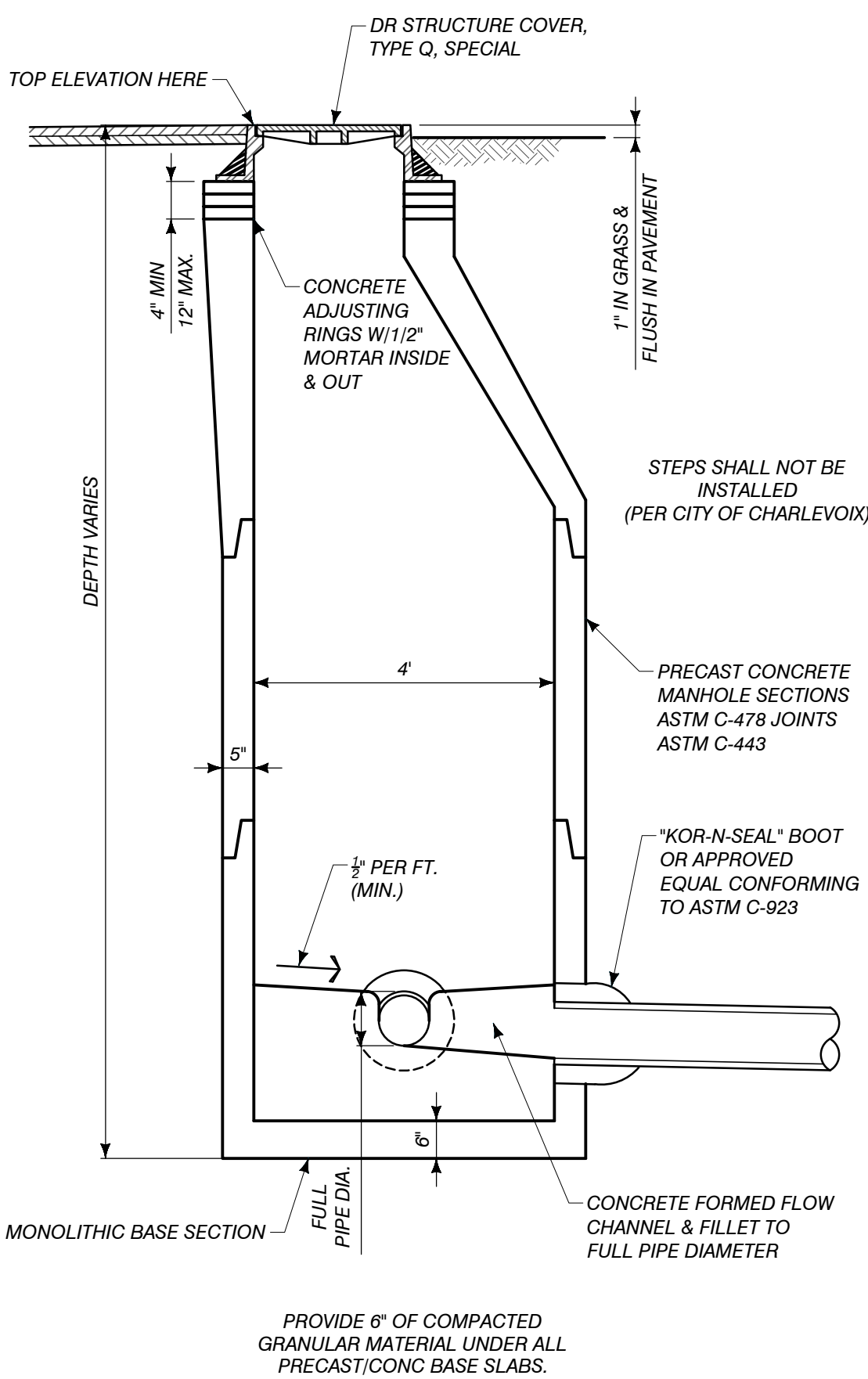
C321



2 PIPE TRENCH DETAIL



PIPE BEDDING & BACKFILL DETAIL



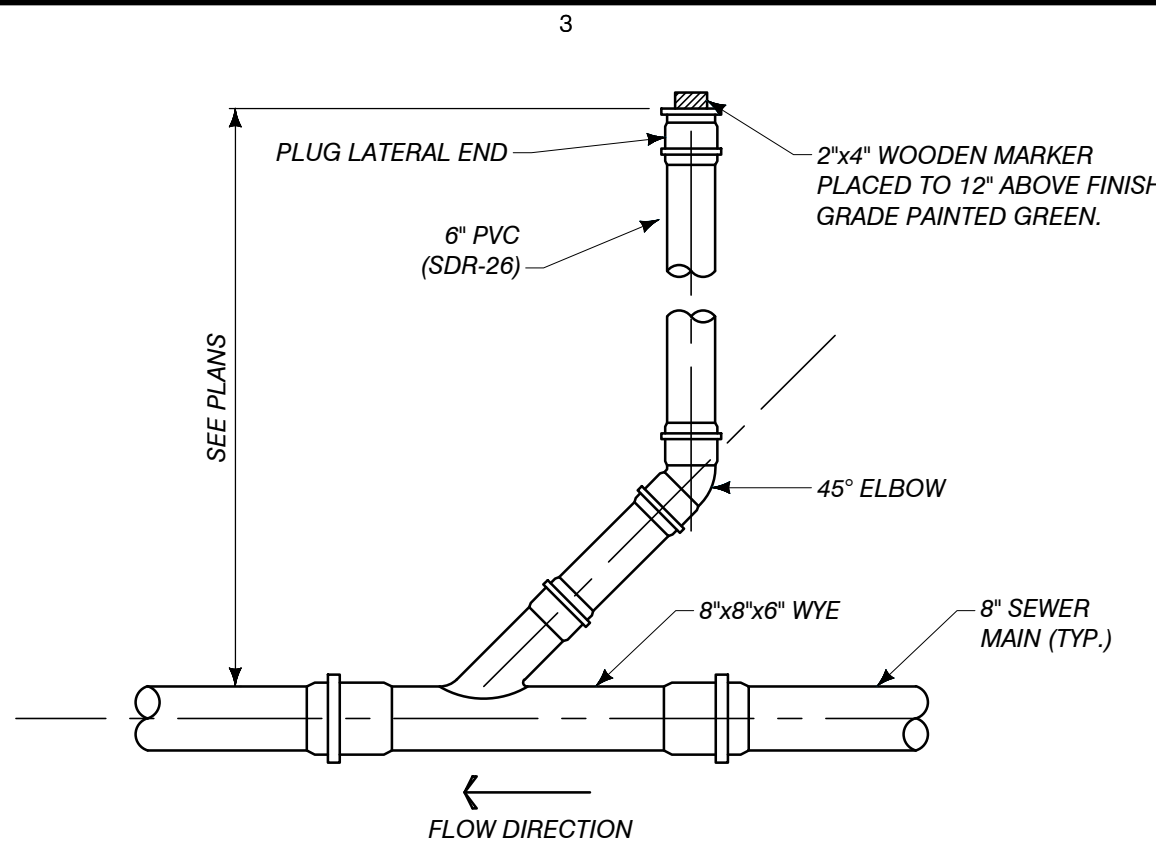
SANITARY SEWER MANHOLE

- ALL MANHOLES TO BE PRECAST REINFORCED CONC WITH PREMIUM JOINTS. SEE SPECIFICATIONS FOR BASE SLAB AND PIPE OPENINGS & CONNECTIONS.
- MANHOLE CONES SHALL BE THE ECCENTRIC TYPE.
- PROVIDE 6" OF COMPACTED GRANULAR MATERIAL UNDER ALL BASE SLABS.
- CONTRACTOR TO PROVIDE KOR-N-SEAL WATERTIGHT FLEXIBLE BOOTS (OR APPROVED EQUAL) CONFORMING TO ASTM C-923 AT ALL PIPE CONNECTIONS TO SANITARY MANHOLES.
- ALL HOLES REQUIRED IN EXISTING SANITARY MANHOLES SHALL BE CORED. NEW MANHOLES SHALL HAVE HOLES CORED OR CAST BY THE MANUFACTURER, NO SAW CUT, GROUTED OR OTHER OPENINGS WILL BE ACCEPTED IN ANY MANHOLE.
- CASTINGS SET IN ROADWAYS SHALL BE SET AS CLOSE TO FLUSH WITH THE ASPHALT SURFACE AS POSSIBLE, IN NO CASE WILL THE CASTING BE ALLOWED TO PROTRUDE ABOVE THE ASPHALT SURFACE, AND NO MORE THAN A 1/4" DIFFERENTIAL BELOW THE SURFACE BE ACCEPTED.
- ALL FRAMES AND ADJUSTING RINGS SHALL BE GROUTED INSIDE AND OUT.

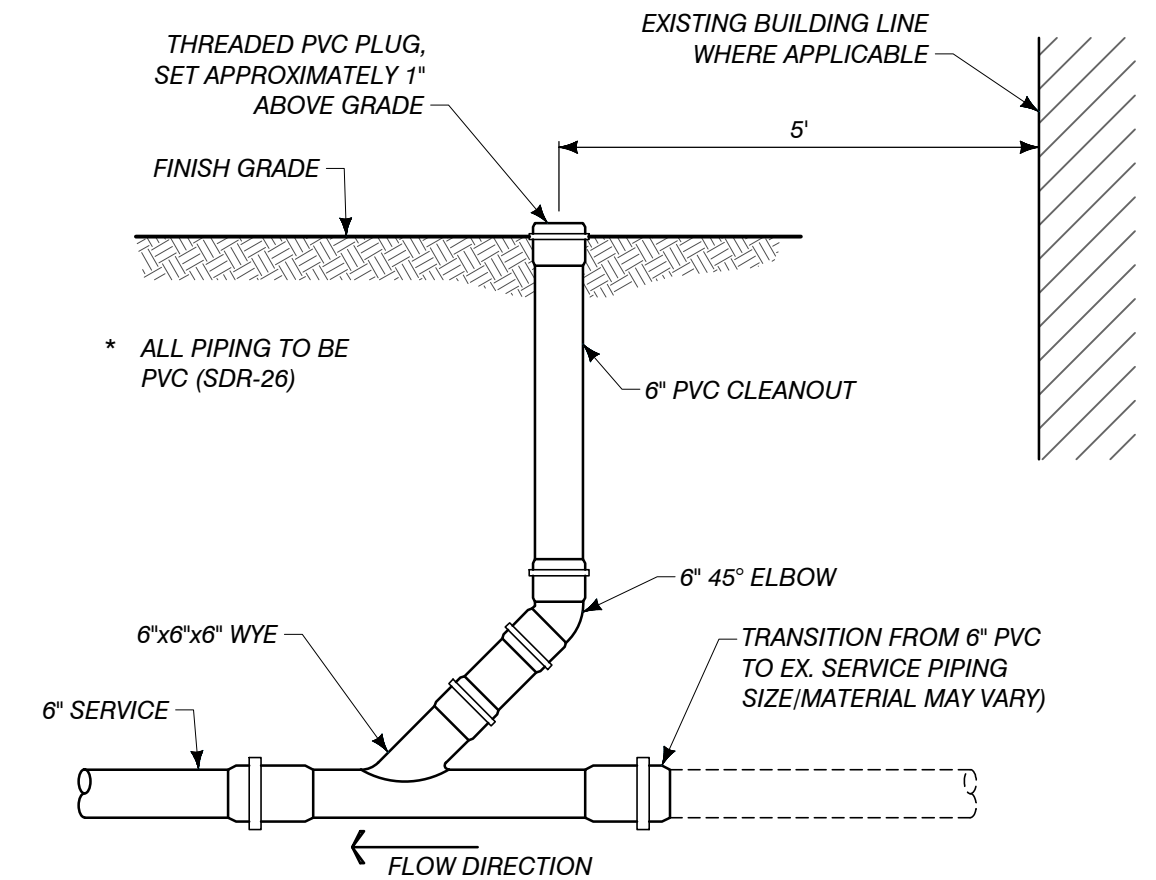
SANITARY MANHOLE NOTES

- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CURRENT REQUIREMENTS OF THE STATE OF MICHIGAN, E.G.L. INSTALLATION OF PVC PIPING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM D2921, THE PLANS AND SUPPLEMENTAL SPECIFICATIONS PROVIDED.
- THE OWNER WILL PROVIDE THE CONTRACTOR WITH THE REQUIRED E.G.L. PERMIT FOR THE SANITARY SEWER CONSTRUCTION. CONSTRUCTION IS NOT TO BEGIN UNTIL THIS PERMIT HAS BEEN OBTAINED.
- ALL SANITARY SEWER GRAVITY PIPING SHALL BE PVC SDR-26 WITH GASKET JOINTS, PIPING LESS THAN 24-INCH DIA. SHALL BE SET BY LASER ALIGNMENT.
- ALL SANITARY FORCEMAIN SEWER PIPING SHALL BE HDPE, DR-11 IPS PIPE SIZE. WHERE PVC FORCEMAIN IS TO BE INSTALLED IN AN OPEN TRENCH, IT SHALL BE A MINIMUM OF SDR-21. ALL FORCEMAIN PIPING SHALL BE INSTALLED WITH A TRACER WIRE FOR LOCATING.
- THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE FOR CONSTRUCTION INSPECTION BY THE ENGINEER AND PROVIDE ACCEPTANCE TESTING OF THE COMPLETED PIPING SYSTEM, PRIOR TO BEING ACCEPTED BY THE OWNER.
- NO INDIVIDUAL SERVICES SHALL BE CONNECTED UNTIL SEWER MAIN HAS BEEN ACCEPTED BY THE OWNER AND PLACED IN-SERVICE.
- SANITARY SERVICE LOCATIONS SHOWN ARE BASED UPON THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ENSURE THAT EVERY HOME IS PROVIDED A CONNECTION TO THE NEW MAINS. THIS WORK IS INCIDENTAL TO THE SERVICE INSTALLATION.

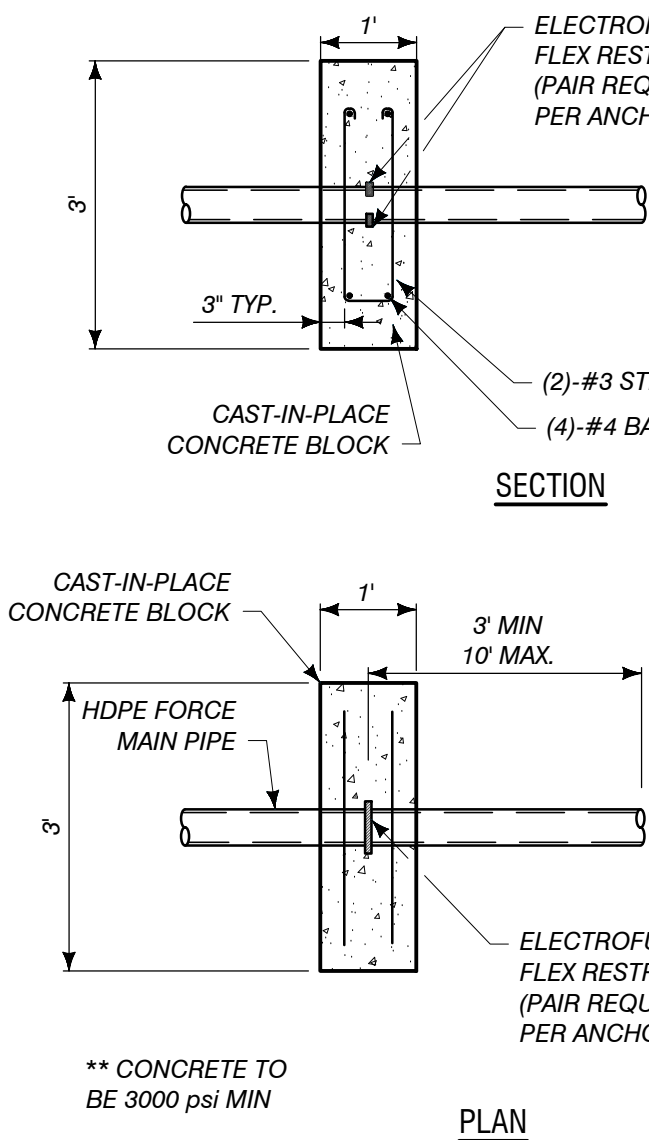
SANITARY CONSTRUCTION NOTES



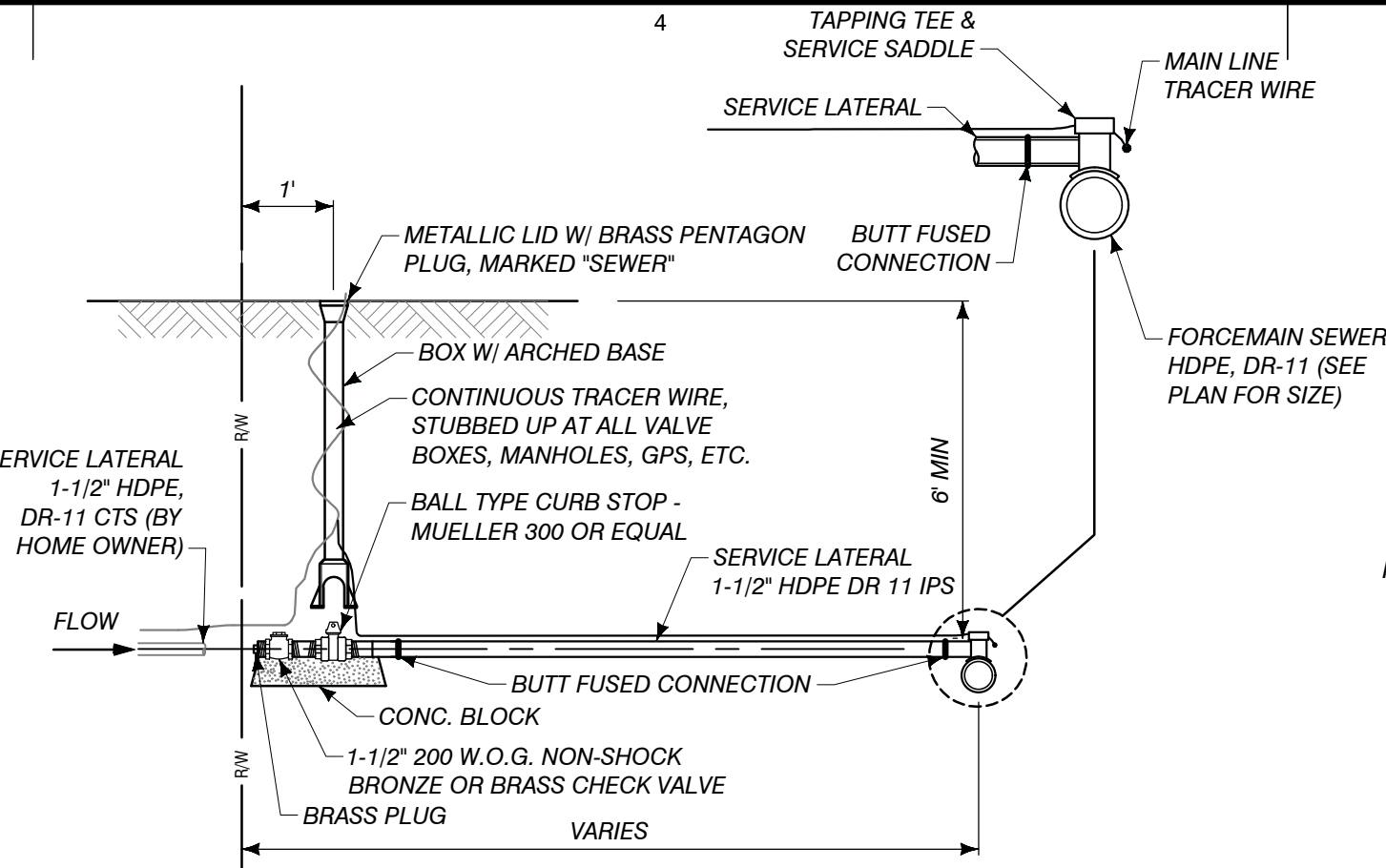
GRAVITY SERVICE DETAIL



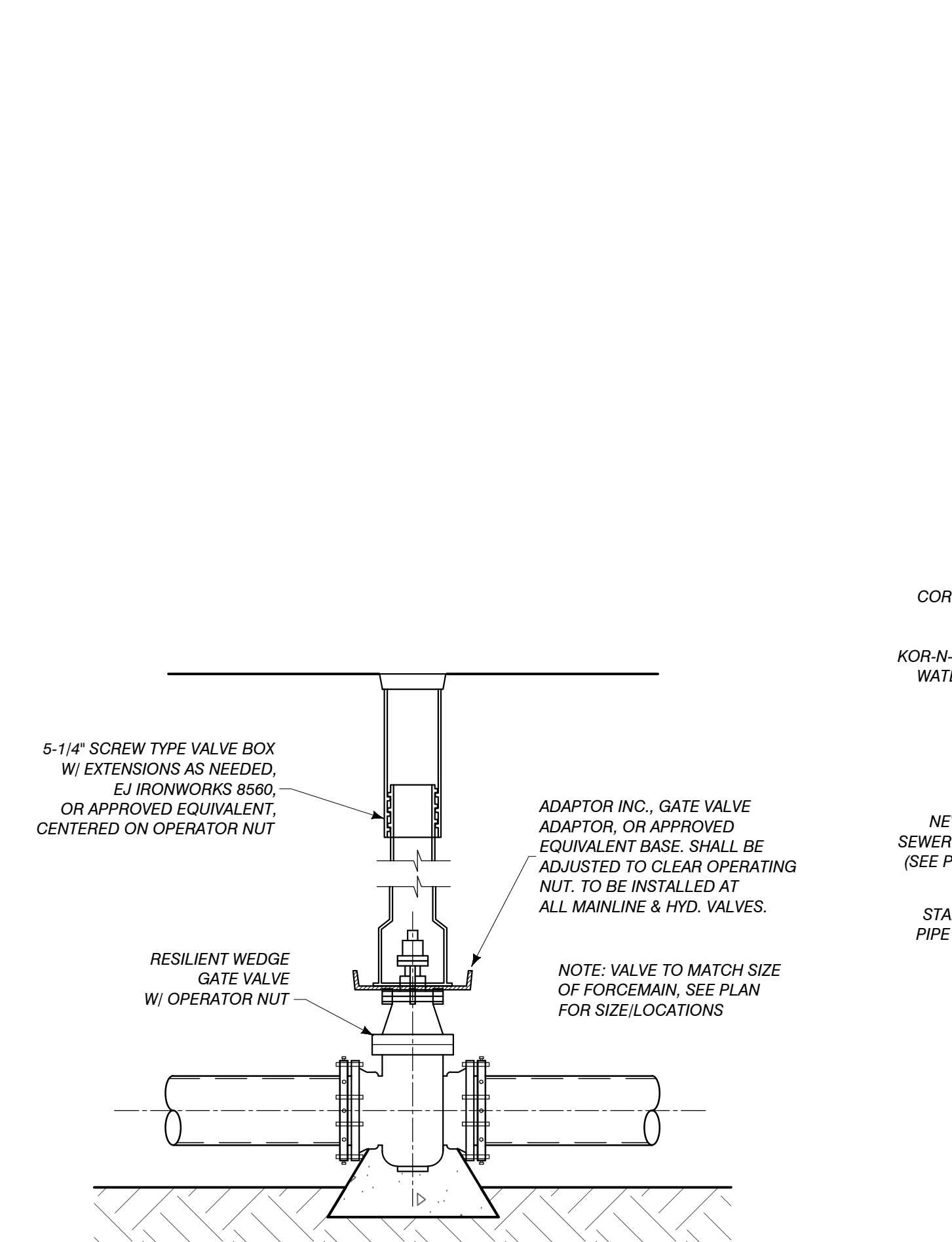
GRAVITY SERVICE CLEANOUT DETAIL



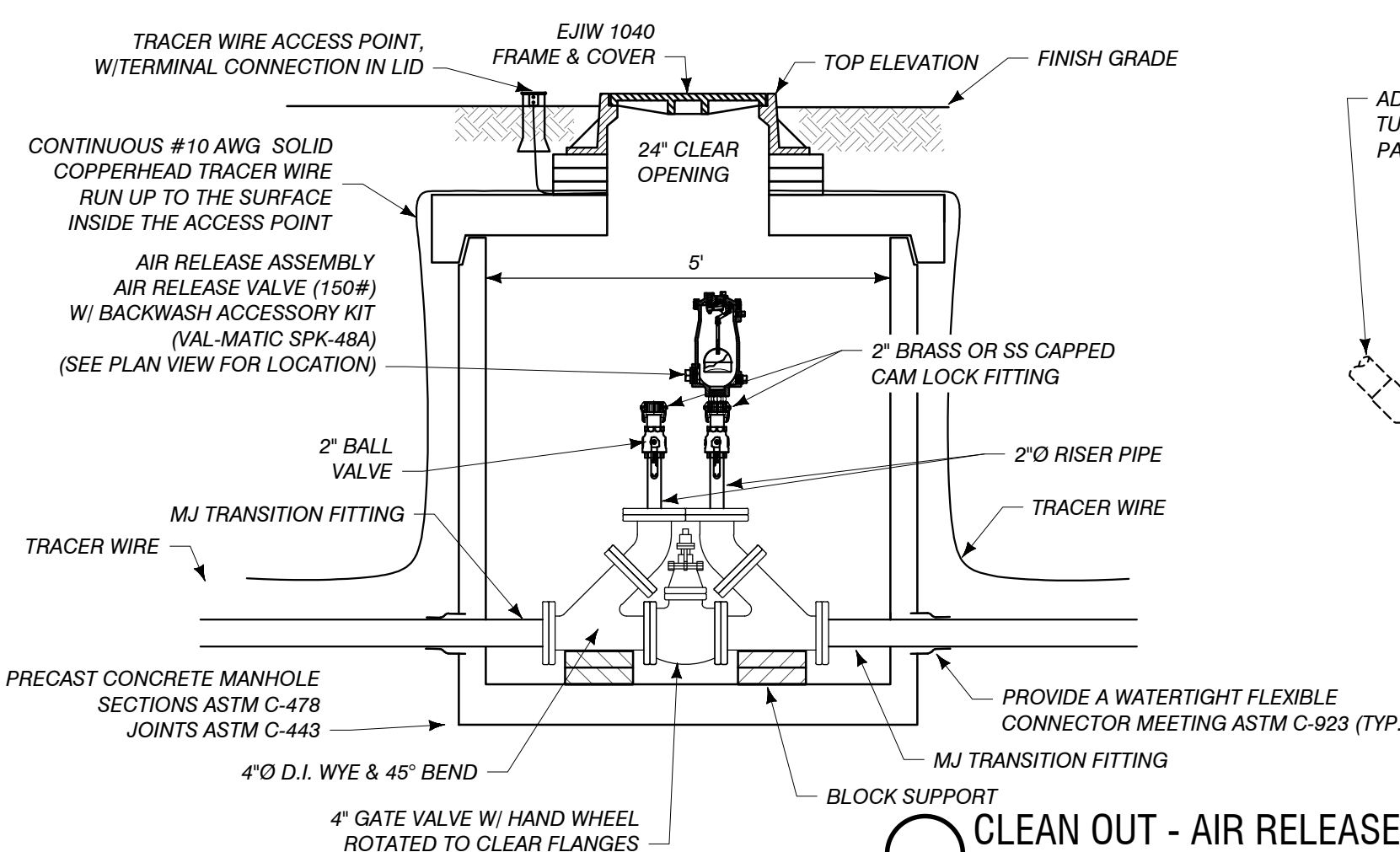
HDPE FORCE MAIN ANCHOR DETAIL



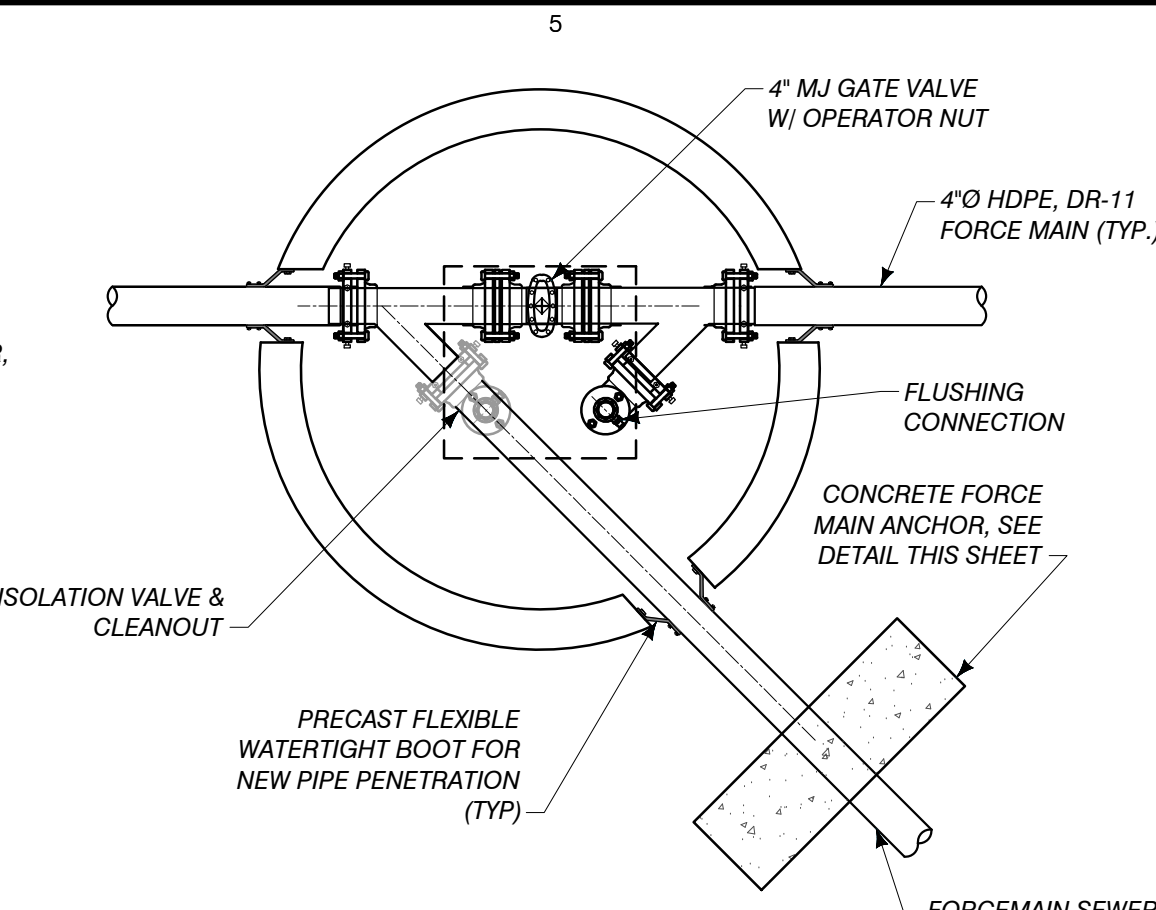
PRESSURE SERVICE DETAIL



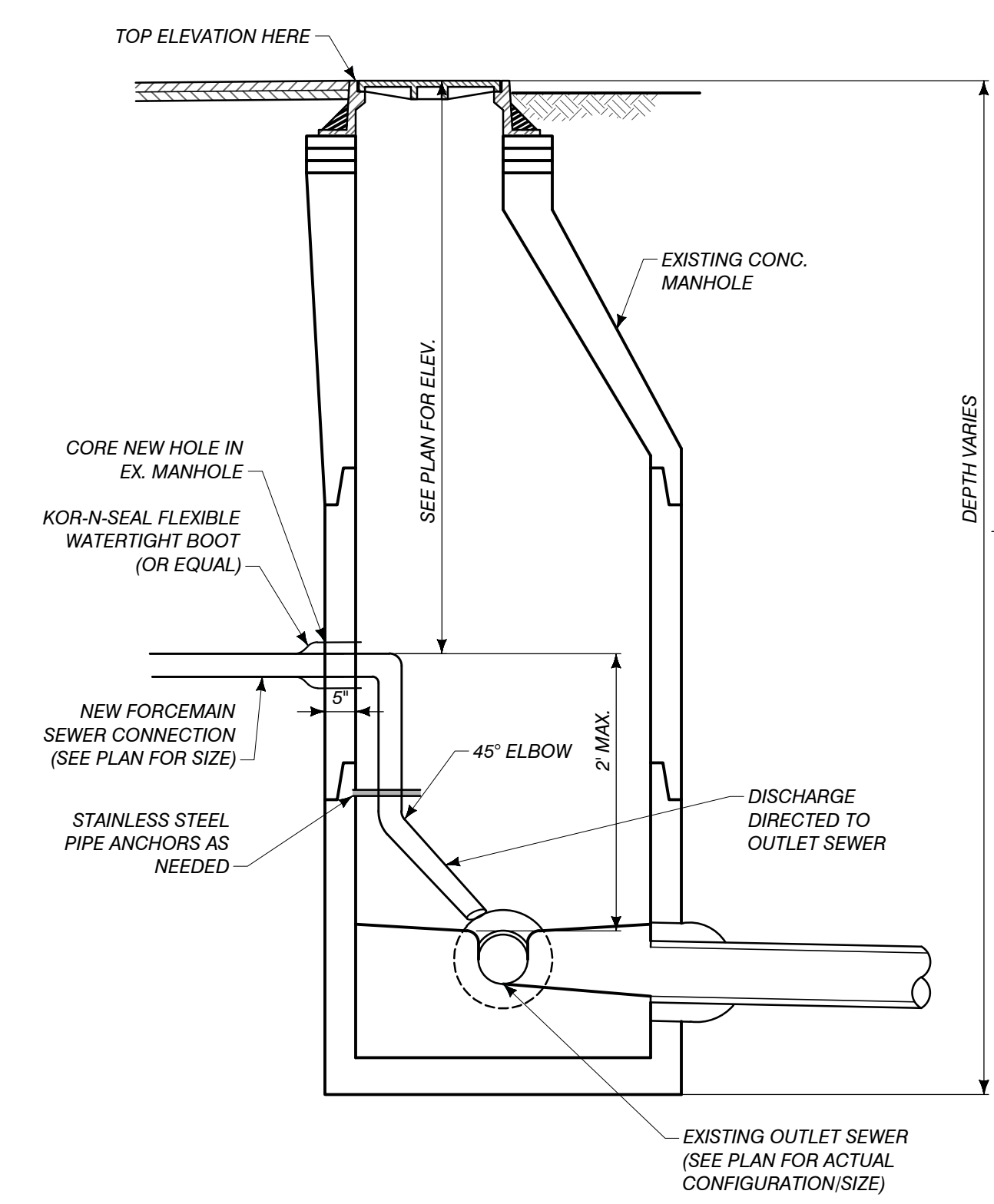
FORCEMAIN VALVE & BOX DETAIL



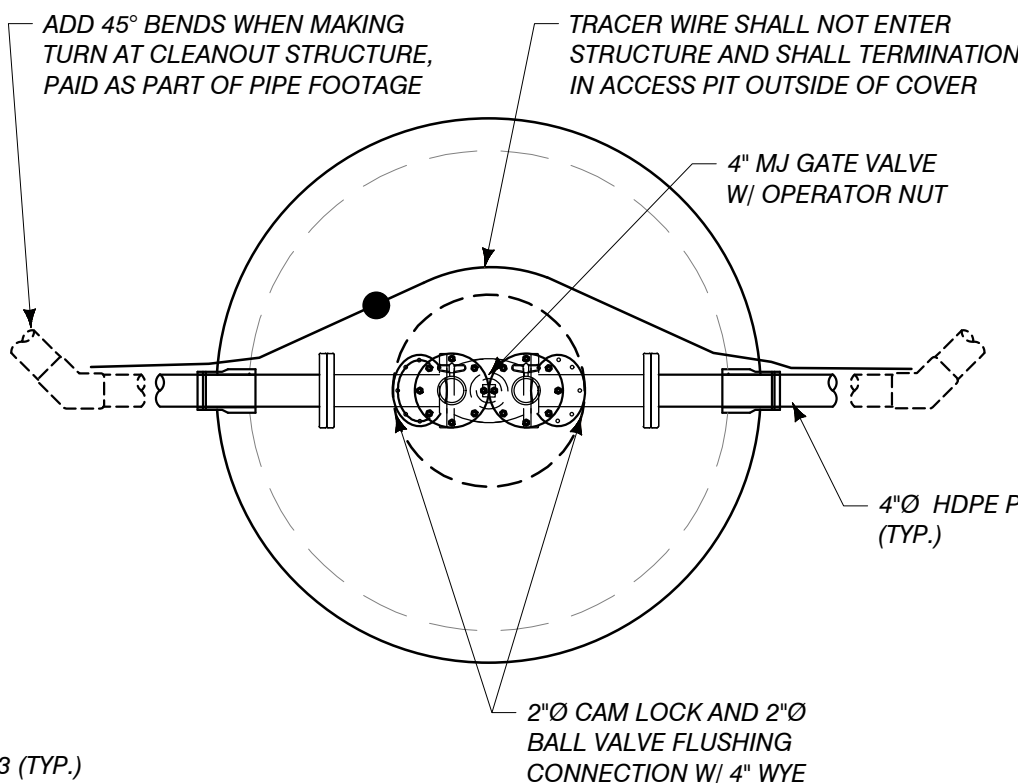
CLEAN OUT - AIR RELEASE



FORCE MAIN CONNECTION DETAIL



EXISTING SEWER TIE-IN DETAIL



AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
-	-	0	NOT ISSUED				
PEI	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER

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OWNER

TUSCARORA TOWNSHIP

SCALE

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SHEET

DETAILS

JOB NO.

22-5797

SHEET NO.

C400

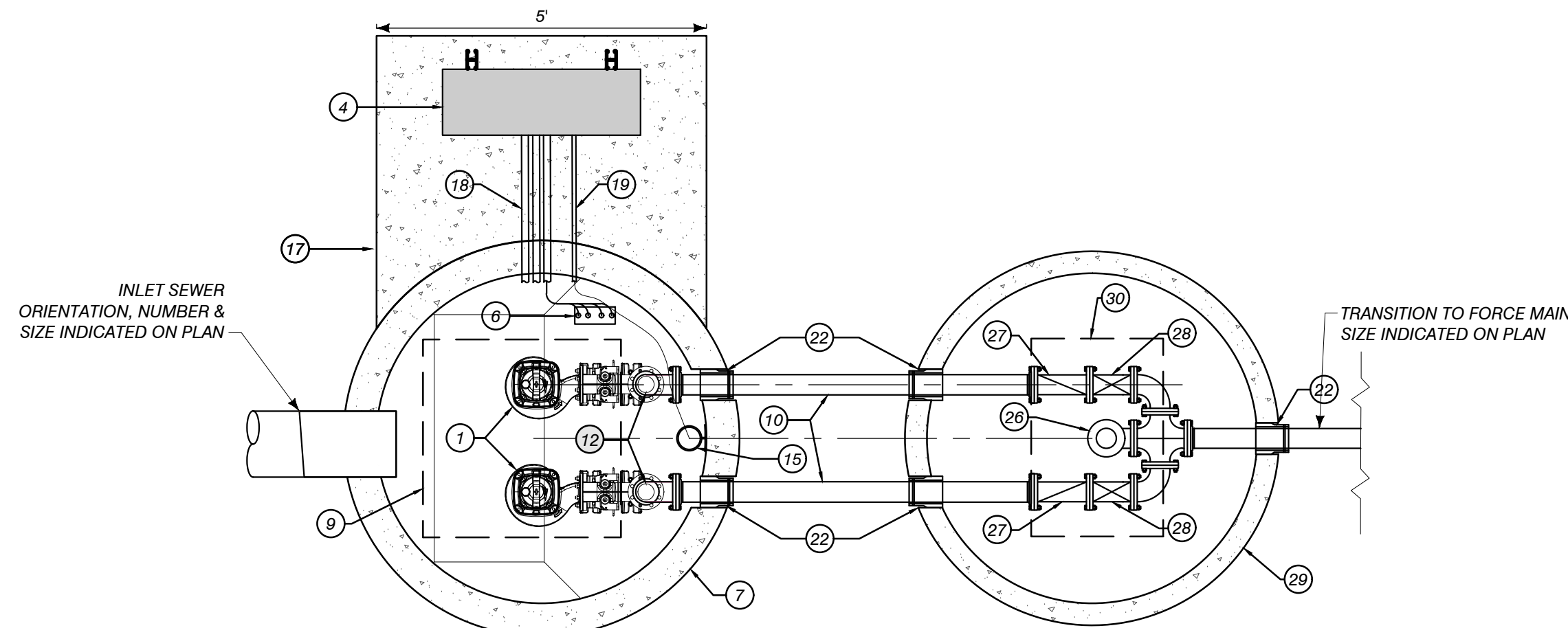
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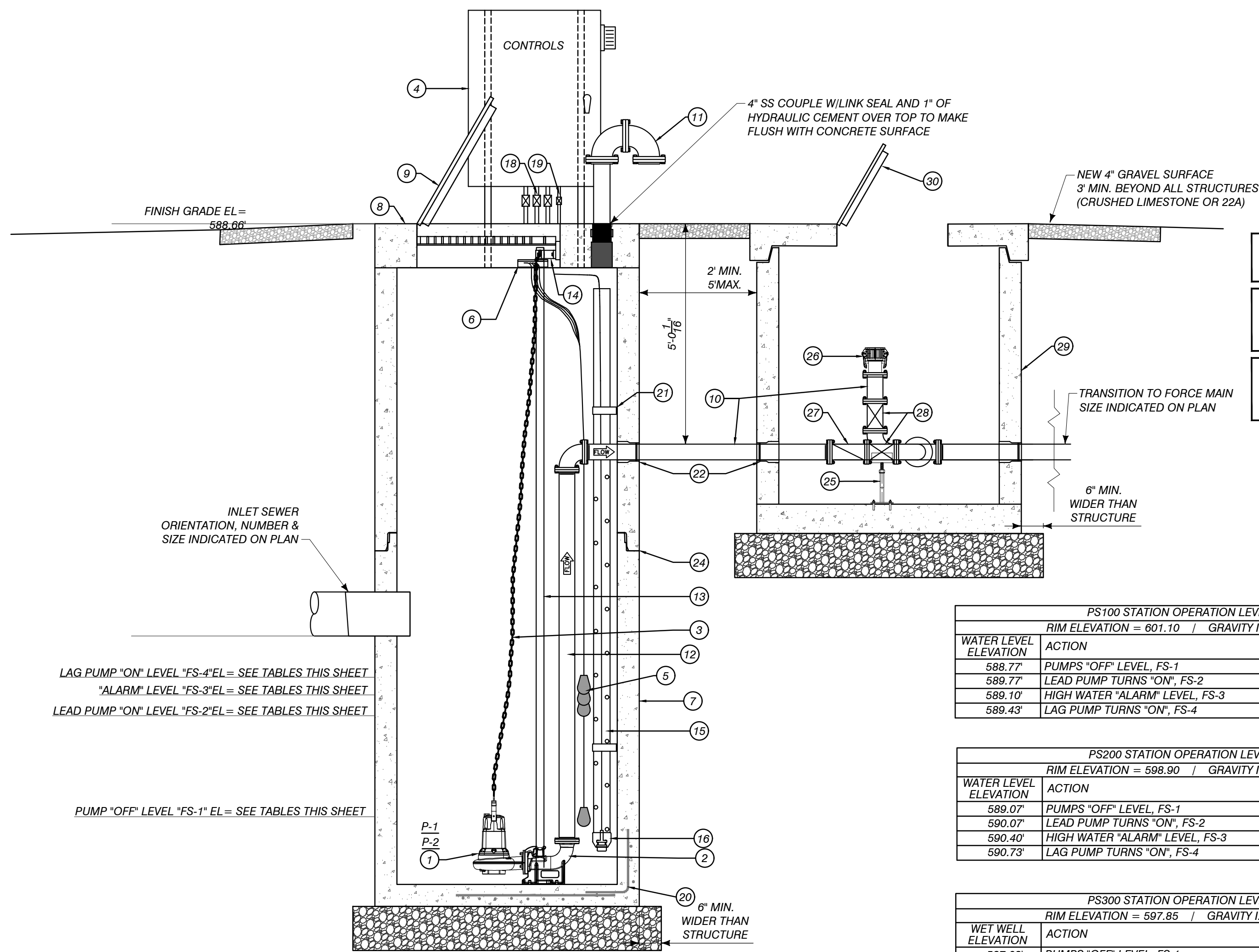
3

4

5



LIFT STATION PLAN VIEW



LIFT STATION SECTION VIEW

NOTE:
VERIFY ALL ELEVATIONS
PRIOR TO FABRICATION

NOTE:
VERIFY ALL PENETRATIONS
PRIOR TO FABRICATION

NOTE:
STRUCTURE TABLE QUANTITIES
ARE UNITS PER STRUCTURE

PS100 STATION OPERATION LEVELS			
RIM ELEVATION = 601.10 / GRAVITY I.E. = 590.78			
WATER LEVEL ELEVATION	ACTION	PUMPS IN OPERATION	
588.77	PUMPS "OFF" LEVEL, FS-1	ALL PUMPS "OFF"	
589.77	LEAD PUMP TURNS "ON", FS-2	LEAD PUMP "ON"	
589.10	HIGH WATER "ALARM" LEVEL, FS-3	HIGH LEVEL ALARM "ON"	
589.43	LAG PUMP TURNS "ON", FS-4	LAG PUMP "ON"	

PS200 STATION OPERATION LEVELS			
RIM ELEVATION = 598.90 / GRAVITY I.E. = 592.12			
WATER LEVEL ELEVATION	ACTION	PUMPS IN OPERATION	
589.07	PUMPS "OFF" LEVEL, FS-1	ALL PUMPS "OFF"	
590.07	LEAD PUMP TURNS "ON", FS-2	LEAD PUMP "ON"	
590.40	HIGH WATER "ALARM" LEVEL, FS-3	HIGH LEVEL ALARM "ON"	
590.73	LAG PUMP TURNS "ON", FS-4	LAG PUMP "ON"	

PS300 STATION OPERATION LEVELS			
RIM ELEVATION = 597.85 / GRAVITY I.E. = 589.86			
WET WELL ELEVATION	ACTION	PUMP OPERATION	
587.02	PUMPS "OFF" LEVEL, FS-1	ALL PUMPS "OFF"	
588.02	LEAD PUMP TURNS "ON", FS-2	LEAD PUMP "ON"	
588.35	HIGH WATER "ALARM" LEVEL, FS-3	HIGH LEVEL ALARM "ON"	
588.68	LAG PUMP TURNS "ON", FS-4	LAG PUMP "ON"	

KEYED NOTES	
MARK	DESCRIPTION
1 2	LIBERTY XLSG200 EXPLOSION PROOF SUBMERSIBLE PUMP
2 2	LIBERTY GR20NS NON-SPARK GUIDE RAIL BASE ASSEMBLY
3 2	3/4" SS STEEL CHAINS
4 1	DUPLEX CONTROL PANEL NEMA 4X
5 4	FLOAT SWITCH
6 1	SS CABLE BRACKET
7 1	48" DIA CONCRETE WET WELL
8 1	12" THICK FLAT CONCRETE TOP
9 1	24" x 36" ACCESS HATCH WITH LIFT ASSIST SHOCK & SAFETY GRATE
10 -	2" HDPE, DR-11 PLUMBING
11 1	4" SS VENT
12 2	2" HDPE SDR-11 PIPE
13 4	SS GUIDE RAILS
14 2	SS UPPER GUIDE BRACKETS
15 1	4" Ø PVC SCH-40 PIPE W/ 3-1" Ø HOLES EVERY 12"
16 2	4" x 2" PVC REDUCER
17 -	12" THICK CONCRETE FOUNDATION FOR CONTROL PANEL
18 3	1" CONDUIT
19 1	3/4" CONDUIT
20 2	REBAR AS REQD
21 2	SS PIPE FASTENERS
22 5	WATERTIGHT FLEXIBLE CONNECTOR ASTM C-923
23 -	12" COMPACTED 6AA STONE BASE
24 -	ALL JOINTS MADE WATER-TIGHT w/ PLASTIC FLEXIBLE GASKET
25 2	SS PIPE SUPPORTS
26 1	BYPASS CONNECTION W/ 2" SS CAMLOCK FITTING
27 2	2" CHECK VALVE
28 3	2" BALL VALVE
29 1	48" PRECAST STRUCTURE (ASTM C 478)
30 1	24" x 36" ACCESS HATCH

SPECIFICATIONS
CONCRETE:
CLASS III CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR, FIRST STAGE OF WALL AND BAFFLE WITH SECTIONAL RISER TO REQUIRED DEPTH.

REINFORCEMENT:
GRADE 60 REINFORCED WITH STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.

ACCESS HATCH:
300 PSF RATED, SKID-RESISTANT FLOOR PLATE, STAINLESS STEEL TAMPERPROOF BOLTING & HINGES, LIFT ASSIST SHOCK & SLAMLOCK. (H-20 RATING)

PUMPS:
PUMPS SHALL BE SUBMERSIBLE GRINDER PUMPS WITH 440 HARDENED STAINLESS STEEL CUTTER & PLATE. PUMPS SHALL HAVE A CAPACITY AS FOLLOWS:

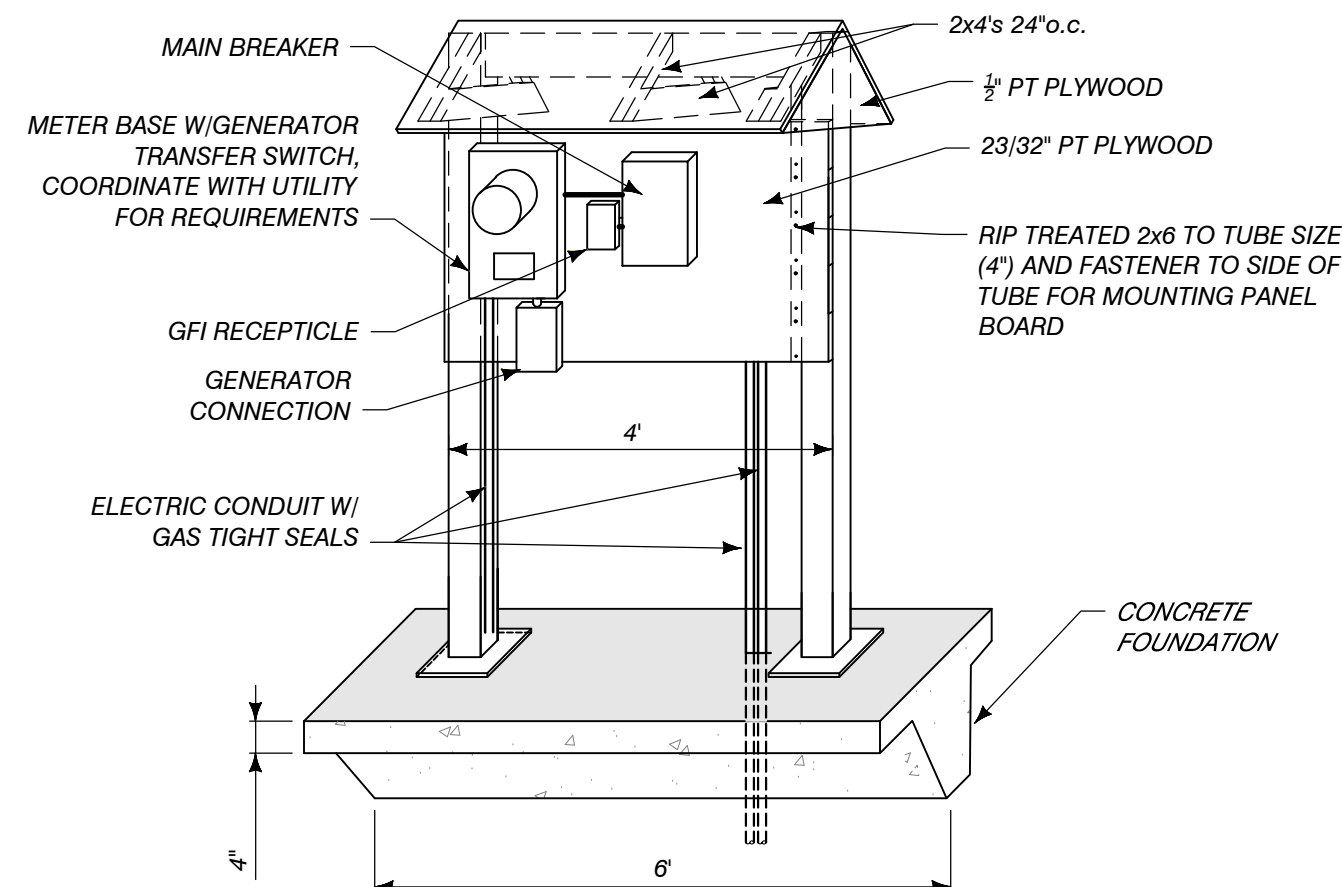
CONTROLS:
PUMP CONTROLS SHALL BE MOUNTED INSIDE A UL LISTED NEMA-4X ENCLOSURE AND INCLUDE CIRCUIT BREAKERS, ALARM CIRCUIT FUSE, IEC RATED MOTOR STARTER, PUMP HOA, AND ALTERNATOR RELAY. PANEL SHALL HAVE A VISUAL ALARM BEACON. PANEL IS DESIGNED FOR REMOTE MOUNTING.

ENGINEERING DATA:

PUMP No.	TYPE	GPM	TDM	RPM	HP	ELECTRICAL V	PH	Hz
PS100	XLSG200	50	15.83'	3450	2.0	230	1	60
PS200	XLSG200	20	19.33'	3450	2.0	230	1	60
PS300	XLSG200	32	32.28'	3450	2.0	230	1	60
PS400	XLSG200	40	45.82'	3450	2.0	230	1	60
PS500	XLSG200	30	23.48'	3450	2.0	230	1	60

PS400 STATION OPERATION LEVELS			
RIM ELEVATION = 596.49 / GRAVITY I.E. = 592.00			
WATER LEVEL ELEVATION	ACTION	PUMPS IN OPERATION	
588.66	PUMPS "OFF" LEVEL, FS-1	ALL PUMPS "OFF"	
589.66	LEAD PUMP TURNS "ON", FS-2	LEAD PUMP "ON"	
589.99	HIGH WATER "ALARM" LEVEL, FS-3	HIGH LEVEL ALARM "ON"	
590.32	LAG PUMP TURNS "ON", FS-4	LAG PUMP "ON"	

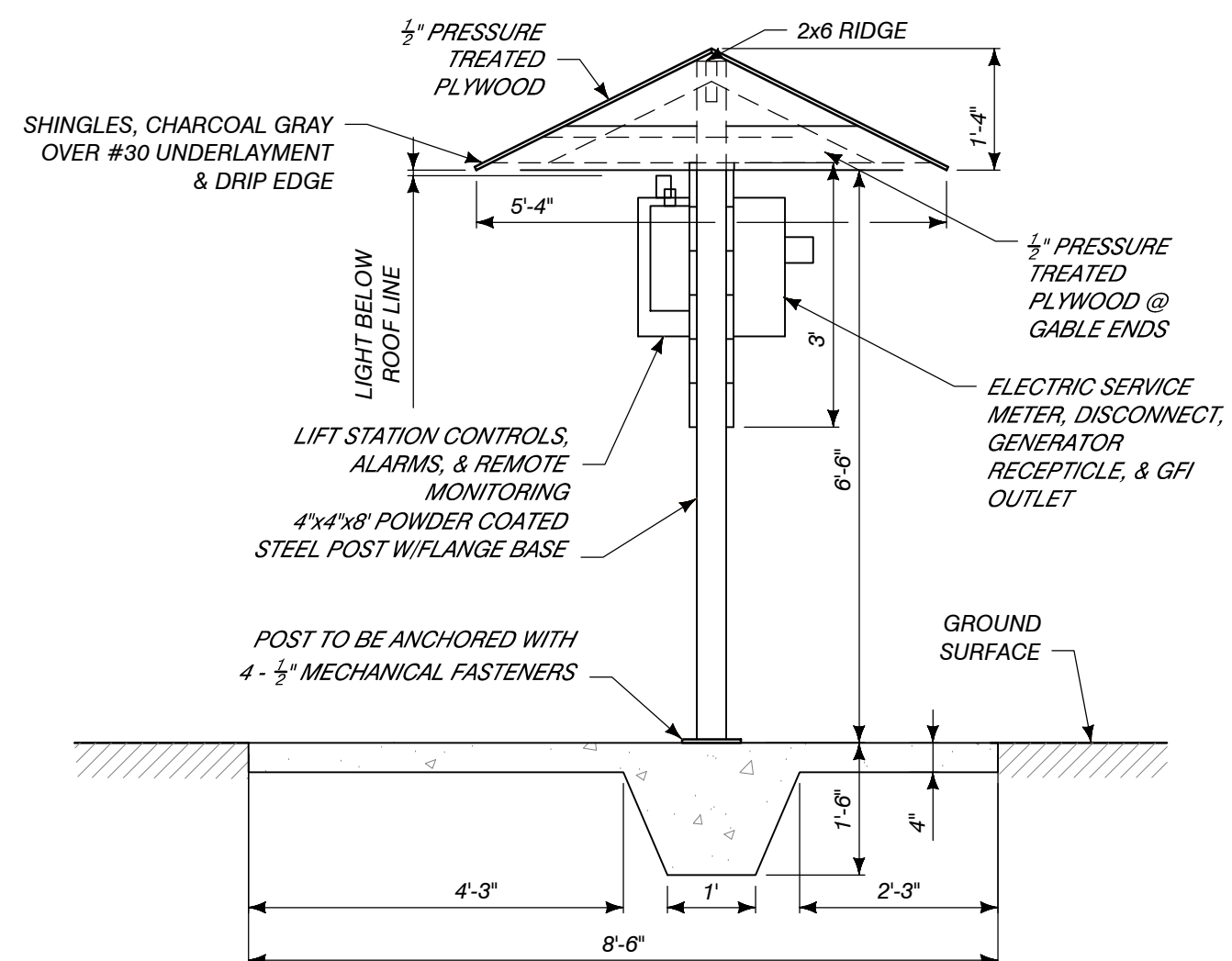
PS500 STATION OPERATION LEVELS			
RIM ELEVATION = 598.18 / GRAVITY I.E. = 594.65			
WATER LEVEL ELEVATION	ACTION	PUMPS IN OPERATION	
590.35	PUMPS "OFF" LEVEL, FS-1	ALL PUMPS "OFF"	
591.35	LEAD PUMP TURNS "ON", FS-2	LEAD PUMP "ON"	
591.68	HIGH WATER "ALARM" LEVEL, FS-3	HIGH LEVEL ALARM "ON"	
592.01	LAG PUMP TURNS "ON", FS-4	LAG PUMP "ON"	



REAR VIEW

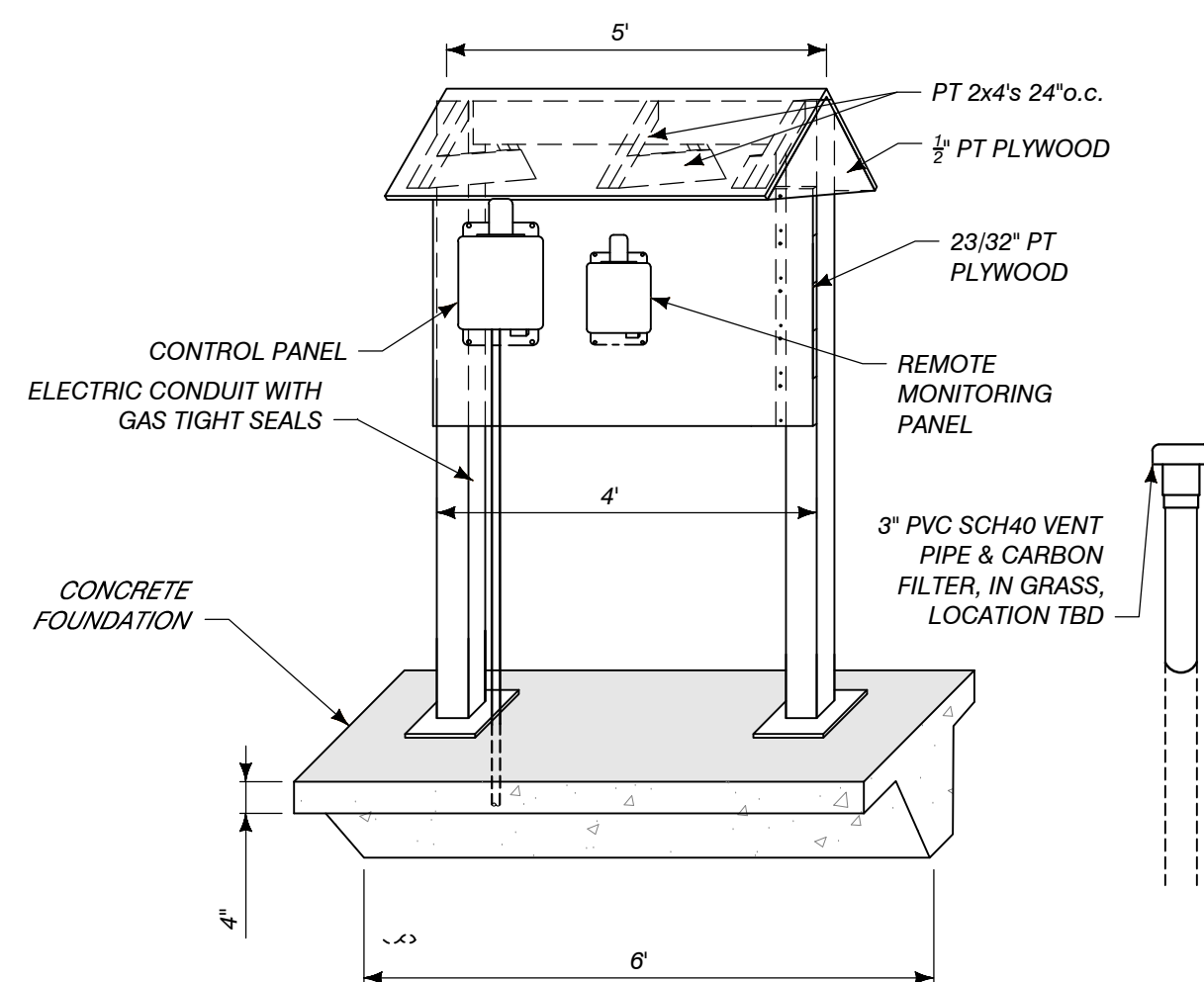
NOTE: 1. ALL STEEL & WOOD FINISHES TO BE PAINTED (COLOR TBD BY OWNER)

2. ALL MATERIALS AND PRODUCTS INDICATED MAY BE SUBSTITUTED FOR EQUAL PRODUCTS AND/OR MATERIALS, SUBJECT TO ENGINEER'S APPROVAL



SIDE VIEW

A4 LIFT STATION CONTROL PANEL DETAIL



FRONT VIEW

AUTH	DATE	NO.	DESCRIPTION	AUTH	DATE	NO.	DESCRIPTION
-	-	0	NOT ISSUED				
PEI	5/1/23	1	PERMIT SUBMITTAL				

DESIGNER

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Charlevoix, Michigan 49720
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www.performanceeng.com

OWNER

TUSCARORA TOWNSHIP

SCALE

PROJECT

TUSCARORA TOWNSHIP
SANITARY SEWER EXPANSION PHASE 1

SHEET

PUMP STATION DETAILS

JOB NO.

22-5797

SHEET NO.

C401