



HANSCOM PARK BANK STABILIZATION PROJECT CASE STUDY

Omaha SEC Seminar
February 13, 2025



Aaron Hirsh, PE, CFM
Embris Group



Erik Dickes
City of Omaha

Park History



Park was formed in November 1872

Omaha's oldest remaining Park

Too hilly for residential development

Lagoon was almost filled in 1946

1960's brought a pool and the tennis center







Project Background



CSO! Green Infrastructure project designed in 2018

Construction completed in 2020

Focused on south side of park

Created a series of bioretention systems

Modification of lagoon outlet structure



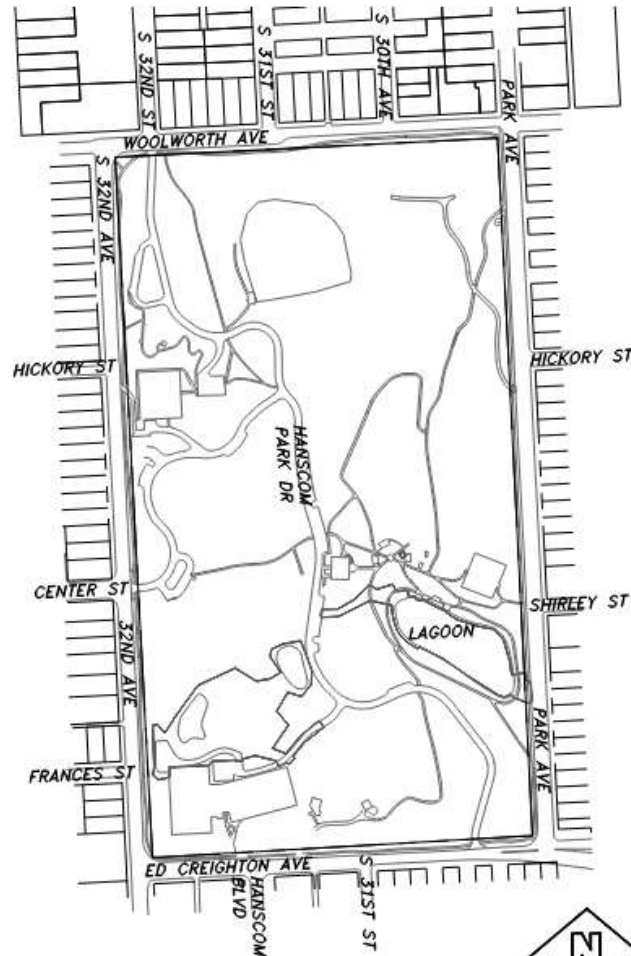
CITY OF OMAHA

PUBLIC WORKS DEPARTMENT

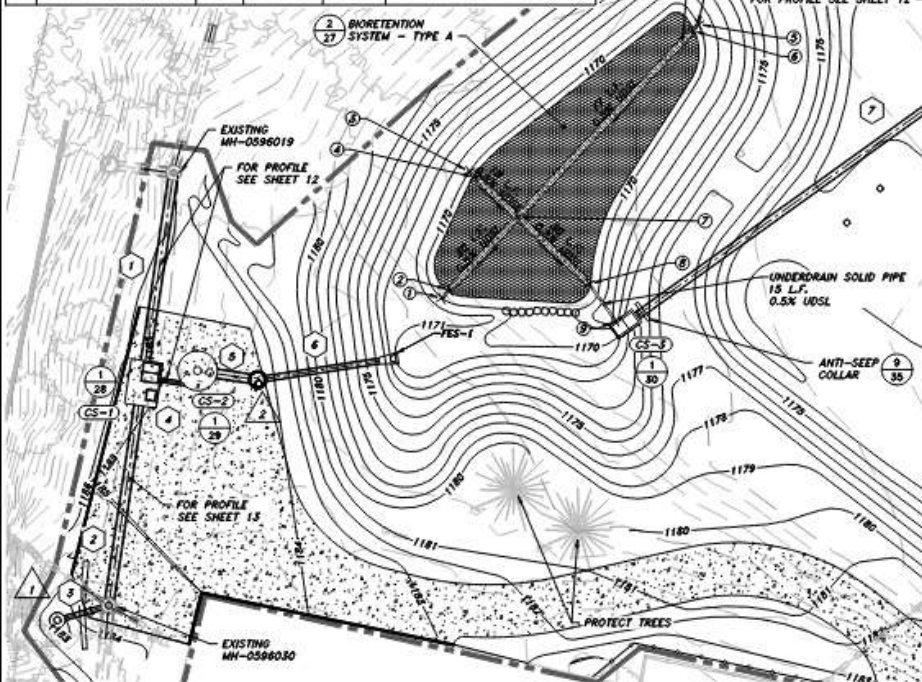
OPW 52781 (CSO)

WEST HANSCOM PARK

GREEN INFRASTRUCTURE



BUILD REINFORCED CONCRETE PIPE				
NO.	LOCATION	CLASS	SIZE	SLOPE
1	MH 0596019 to CS-1	III	30" x 65"	0.48%
2	CS-1 to MH 0596030	III	30" x 70"	4.86%
3	MH-1 to MH 0596030	III	18" x 16"	4.20%
4	CS-1 to CS-2	III	12" x 12"	12.74%
5	CS-2 to MH-2	III	30" x 13"	2.97%
6	MH-2 to FES-1	III	18" x 37"	1.00%
7	CS-3 to MH-5	III	24" x 164"	0.50%
8	MH-5 to MH-4	III	24" x 149"	9.00%
9	MH-4 to MH-5	III	30" x 27"	1.00%
10	MH-5 to FES-2	III	30" x 9"	1.00%
11	MH-6 to CS-5	III	24" x 14"	7.30%



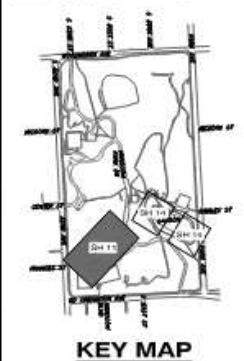
FLARED END SECTION - See Standard Plate 700-70				
NO.	LOCATION	SIZE	F.L.=	REMARKS
FES-1	N = 538415.50 E = 2750814.47	18" ID	INV = 1171.11 (18"SW)	WITH BAR GRATES
FES-2	N = 538614.68 E = 2751145.29	30" ID	INV = 1142.89 (30"SW)	WITH BAR GRATES

STORM SEWER PLAN LEGEND	
	CONCRETE PAVEMENT
	EXTENT OF RIVER ROCK COBBLES
	EXTENT OF AREA TO RECEIVE BIORETENTION SOIL MIX
	EXTENT OF AREA TO RECEIVE SOIL CONDITIONING
	SLOTTED UNDERDRAIN PIPE
	SOLID UNDERDRAIN PIPE

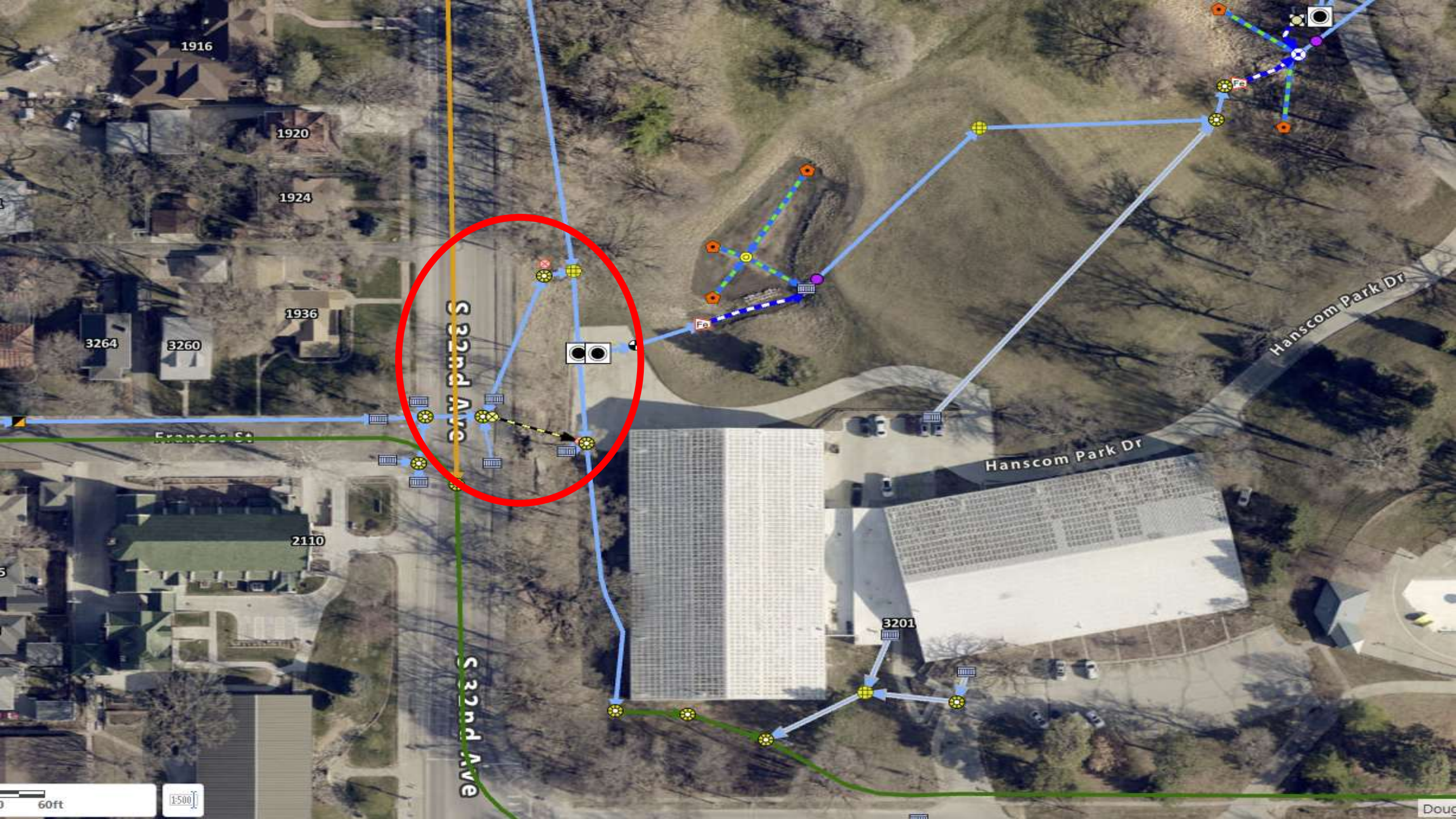
CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	538436.82	2750828.04	1167.26	UDY CLEANOUT
2	538439.79	2750829.65	1167.24	UDY BEGIN PERFORATION
3	538476.10	2750826.18	1167.19	UDY CLEANOUT
4	538474.90	2750828.41	1167.18	UDY BEGIN PERFORATION
5	538537.18	2750881.88	1167.49	UDY CLEANOUT
6	538554.83	2750880.62	1167.45	UDY BEGIN PERFORATION
7	538466.54	2750843.99	1167.09	UDY CROSS
8	538452.33	2750870.10	1166.94	UDY 11.25 DEG BEND & END PERF
9	538445.75	2750880.78	1166.86	UDY CS-3 WALL PENETRATION
10	538672.70	2751132.04	1139.65	UDY CLEANOUT
11	538671.50	2751133.85	1139.64	UDY BEGIN PERFORATION
12	538645.60	2751172.93	1139.41	UDY END PERFORATION
13	538642.08	2751178.24	1139.38	UDY 11.25 DEG BEND
14	538640.44	2751179.89	1139.36	UDY CS-4 WALL PENETRATION
15	538584.21	2751176.36	1139.63	UDY CLEANOUT
16	538586.27	2751176.54	1139.62	UDY BEGIN PERFORATION
17	538618.03	2751176.15	1139.46	UDY END PERFORATION
18	538633.00	2751176.06	1139.39	UDY 22.5 DEG BEND
19	538637.02	2751180.03	1139.36	UDY CS-4 WALL PENETRATION

CONSTRUCT MANHOLE - See Standard Plate 700-40				
NO.	LOCATION	SIZE	V.F.	F.L.=
MH-1	N = 538312.42 E = 2750740.42	48" I.D.	6.9	RM = 1184.00 INV IN = 1177.17 (15"NE)
MH-2	N = 538398.51 E = 2750780.41	54" I.D.	12.7	RM = 1184.12 INV IN = 1175.60 (30"W) INV OUT = 1171.48 (18"NE)
MH-3	N = 538572.98 E = 2750990.40	54" I.D.	10.6	RM = 1170.40 INV IN = 1165.93 (24"SW) INV OUT = 1158.89 (24"E)
MH-4	N = 538583.42 E = 2751159.59	72" I.D.	7.7	RM = 1151.04 INV IN = 1146.45 (24"W) INV IN = 1147.24 (12"SW) INV OUT = 1143.53 (50"N)
MH-5	N = 538609.92 E = 2751137.54	72" I.D.	4.6	RM = 1147.31 INV IN = 1143.08 (30"SE) INV OUT = 1142.98 (30"NE)
MH-6	N = 538669.56 E = 2751195.07	54" I.D.	11.1	RM = 1148.00 SUMP = 1137.00 INV IN = 1141.28 (27"NE) INV OUT = 1141.00 (24"W)
MH 0596019 (EXISTING)	N = 538452.56 E = 2750739.59			RM = 1185.16 INV IN = 1178.17 (30"W) INV IN = 1177.00 (24"N) INV OUT = 1177.00 (30"SE)
MH 0596030 (EXISTING)	N = 538320.71 E = 2750754.33			RM = 1184.75 INV IN = 1173.10 (30"N) INV IN = 1176.49 (15"SW) INV IN = 1178.47 (12"E) INV IN = 1175.61 (15"W) INV OUT = 1173.10 (36"SE)

CONSTRUCT CUSTOM STRUCTURES				
NO.	LOCATION	V.F.	F.L.=	REMARKS
CS-1	N = 538590.20 E = 2780746.56	11.6	RM = 1185.59 SUMP = 1174.00 INV IN = 1176.70 (30"W) INV OUT = 1176.50 (30"SE) INV OUT = 1176.25 (12"E)	1 28
CS-2	N = 538396.46 E = 2750762.08	19.3	RM = 1184.60 SUMP = 1165.33 INV IN = 1174.77 (12"W) INV OUT = 1176.00 (30"E)	1 29
CS-3	N = 538443.64 E = 2750885.93	5.0	RM = 1174.50 INV IN = 1166.86 (6"W) INV OUT = 1166.75 (24"NE)	1 30
CS-4	N = 538640.04 E = 2751183.02	6.4	RM = 1145.50 INV IN = 1139.56 (6"W) INV IN = 1139.56 (6"SW) INV OUT = 1139.56 (24"NE)	CONNECT EXISTING 24"NE W/S LF 24" CL IN PIPE AND CONC. COLLAR 1 31
CS-5	N = 538665.91 E = 2751180.82	4.5	RM = 1144.75 INV IN = 1140.00 (24"E)	1 32



FILENAME: C:\Users\Production\Desktop\Map\OPW-52781-1\Map_11x17.dwg
DATE PLOTTED: 6/6/2016 4:30 PM DRAWN BY: xox PLOT SCALE: 1/2"=1'-0"



1916

1920

1924

1936

3264

3260

Frances St

2110

S 32nd Ave

S 32nd Ave

Hanscom Park Dr

Hanscom Park Dr

3201

0 60ft

1:500

Douglas















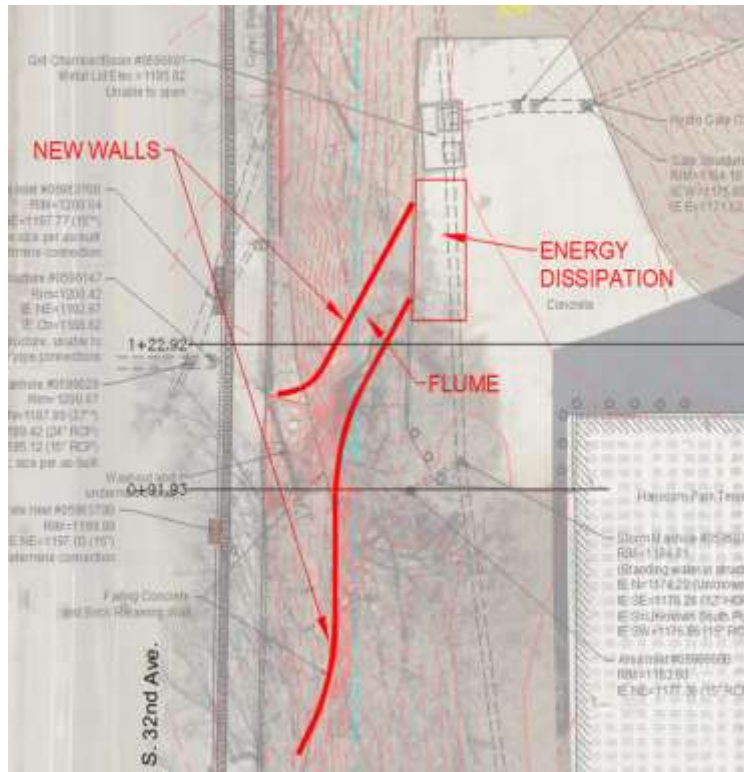








Project Design



Surcharged CSO sewer system

Alternatives Analysis

Rebuild failed cobblestone wall

Overtopping flow path

Energy dissipation

Design Team



OWNER

City of Omaha Design Division,
Parks & Recreation



DESIGNER

Design, Permitting &
Construction Admin Assistance



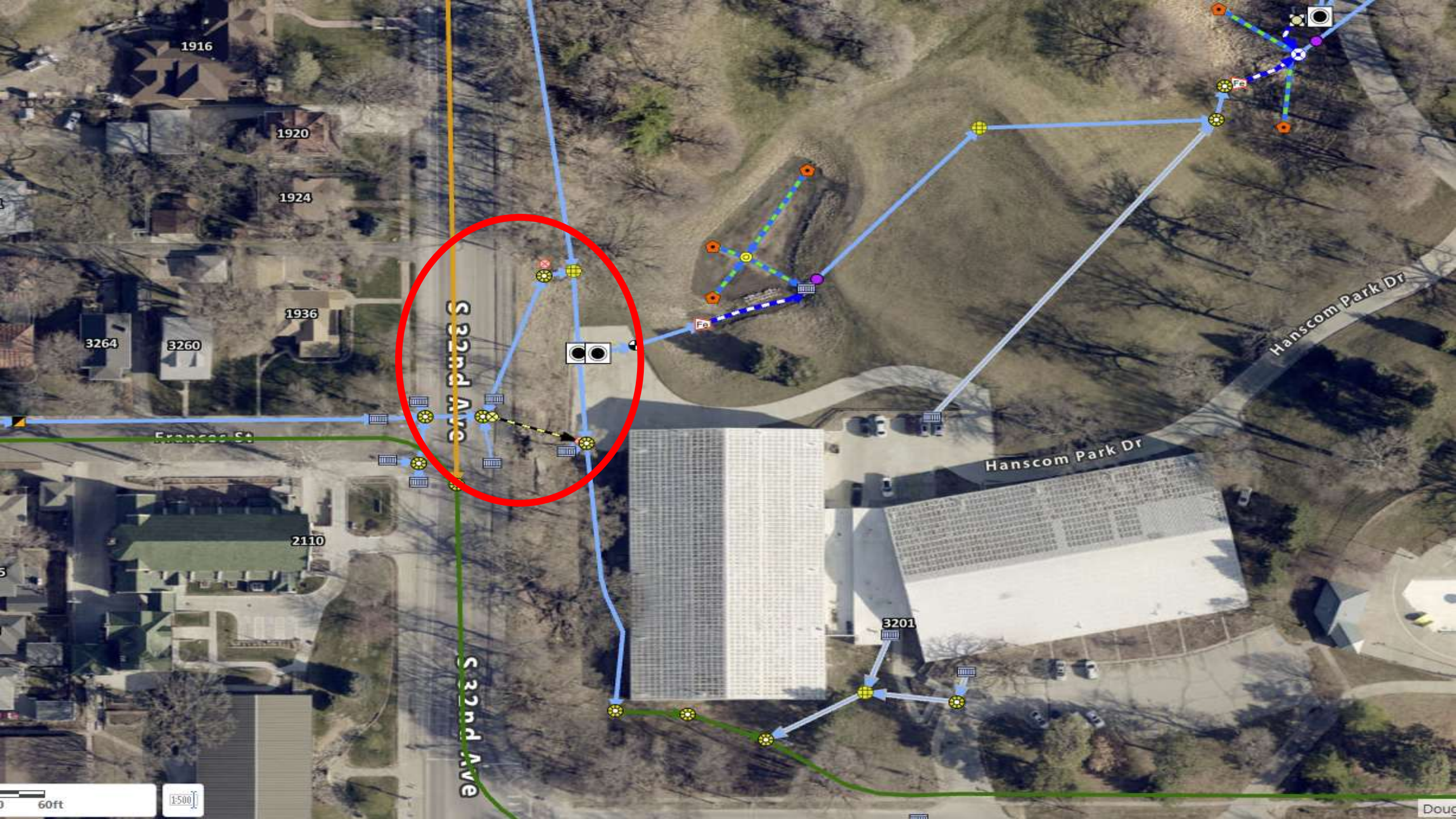
GEOTECHNICAL

Geotechnical Report and
Retaining Wall Design



SURVEYING

Topographic Survey



1916

1920

1924

1936

3264

3260

2110

Frances St

S 32nd Ave

S 32nd Ave

Hanscom Park Dr

Hanscom Park Dr

3201

0 60ft

1:500

Docu

Distance: 152.3 ft.

OBR - Obstacle Rocks

Clock from: 6 o'clock

Clock to: 6 o'clock

Rating: 5

Dimension 1:

Dimension 2:

#: 45 %

To exit full screen, press Esc

CREW HAS BEEN HAND CLEANING PIPE FOR 4 HOURS. WILL CONTINUE.



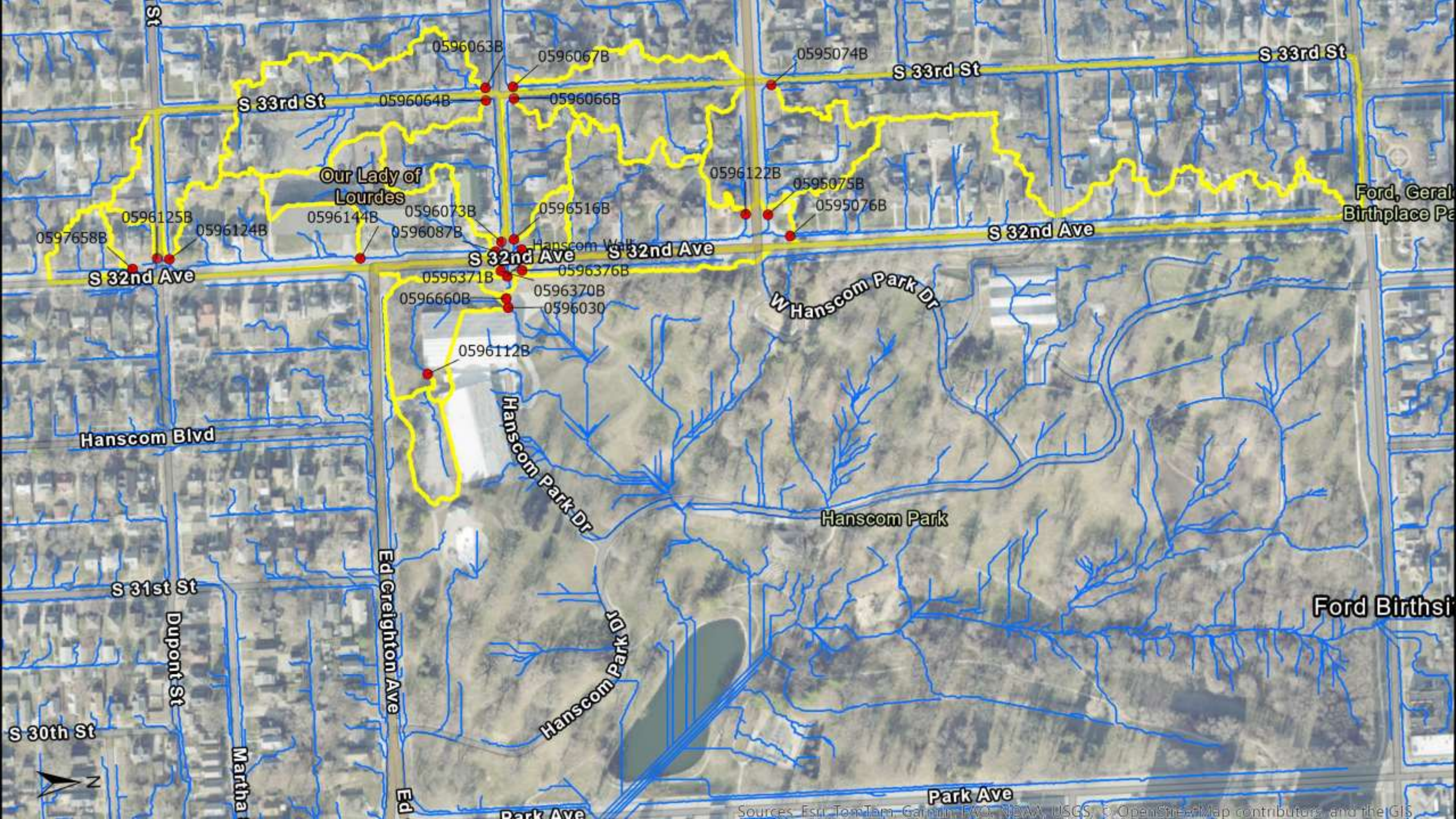


9/13/2018

155.6 ft.

Upstream MH No: AMH '0596030'

Downstream MH No: AMH '0596038'



0597658B

0596125B

0596124B

0596144B

0596073B

0596087B

0596516B

0596371B

0596660B

0596112B

0596376B

0596370B

0596030

0596063B

0596067B

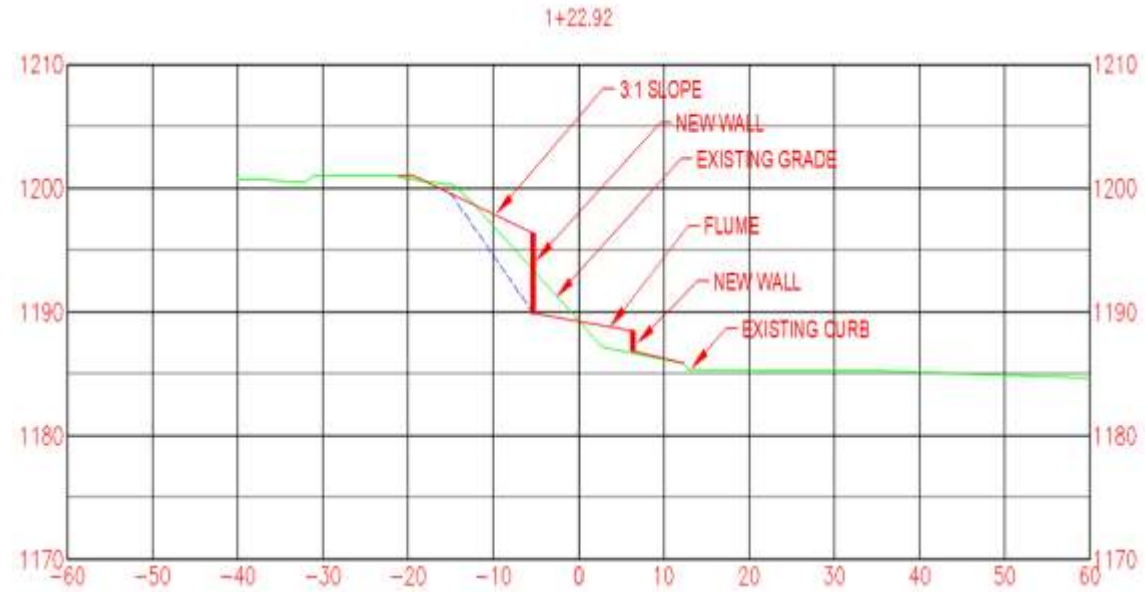
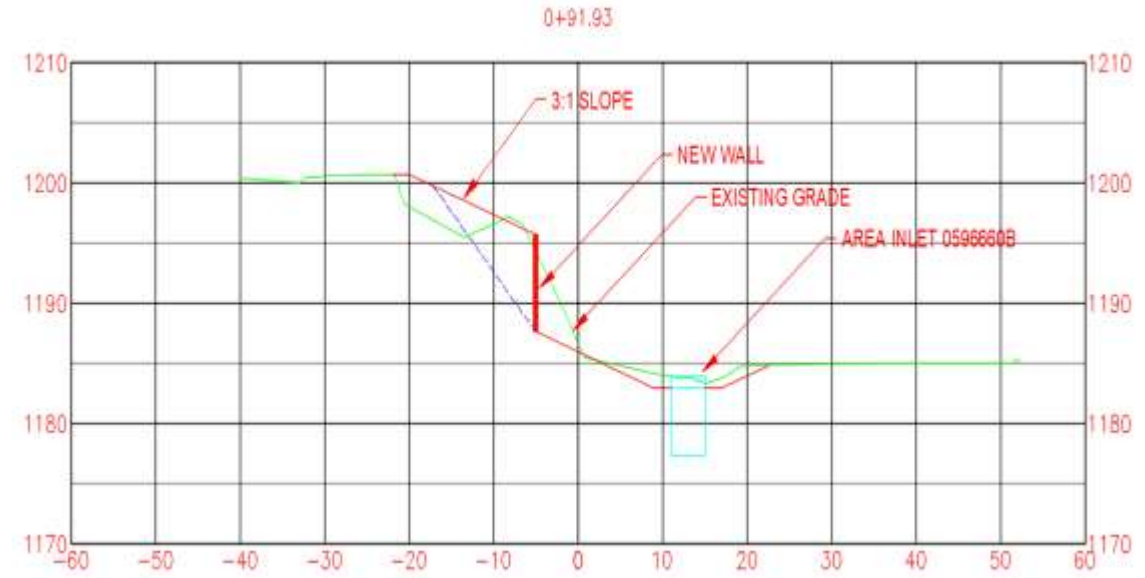
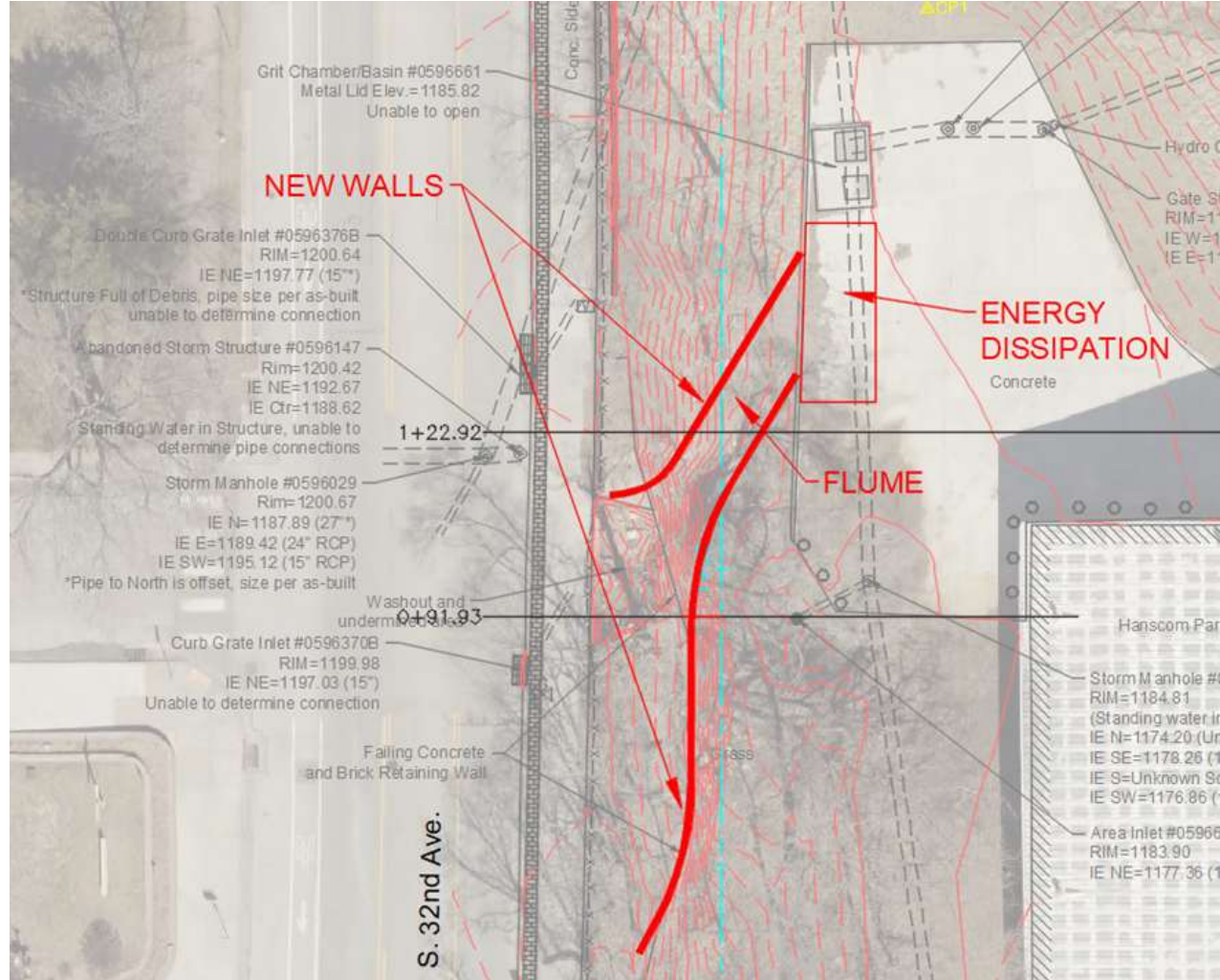
0596066B

0595074B

0596122B

0595075B

0595076B



FILENAME: C:\Users\jordan\OneDrive\Documents\Projects\OPW 54513\Hanscom Park Bank Stabilization\Original_Plan\54513-HANS-REPAIRS.dwg
DATE PLOTTED: 4/12/2024 3:24 PM DRAWN BY: JH PLT SCALE: 1"=10'



CONTROL POINTS				
POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	10" PAVEMENT	1185.71	102680.9989	155962.3584
2	10" PAVEMENT	1185.17	102680.9992	155964.3584
3	10" PAVEMENT	1185.10	102675.4732	155964.2204
4	10" PAVEMENT	1184.26	102694.4720	155969.8760
5	10" PAVEMENT	1185.40	102682.7656	156002.4407
6	10" PAVEMENT	1185.44	102680.7601	156002.4800
7	10" PAVEMENT	1184.66	102682.4688	155969.9225
8	10" PAVEMENT	1183.22	102698.4845	155965.2257
9	10" PAVEMENT	1184.01	102687.0016	155962.1970
10	GROUTED BOULDERS	1185.57	102785.5485	155969.5547
11	GROUTED BOULDERS	1184.49	102801.2667	155979.2701
12	GROUTED BOULDERS	1186.00	102810.4281	155967.8553
13	GROUTED BOULDERS	1190.34	102838.3149	155955.3249
14	GROUTED BOULDERS	1192.72	102801.5194	155948.8900
15	UNDERDRAIN CLEAOUT	1184.36	102802.8541	155978.1154

NOTE: PAVEMENT ELEVATIONS ARE TOP OF SLAB OR TOP OF CURB.

REVISIONS

PAVING PLAN

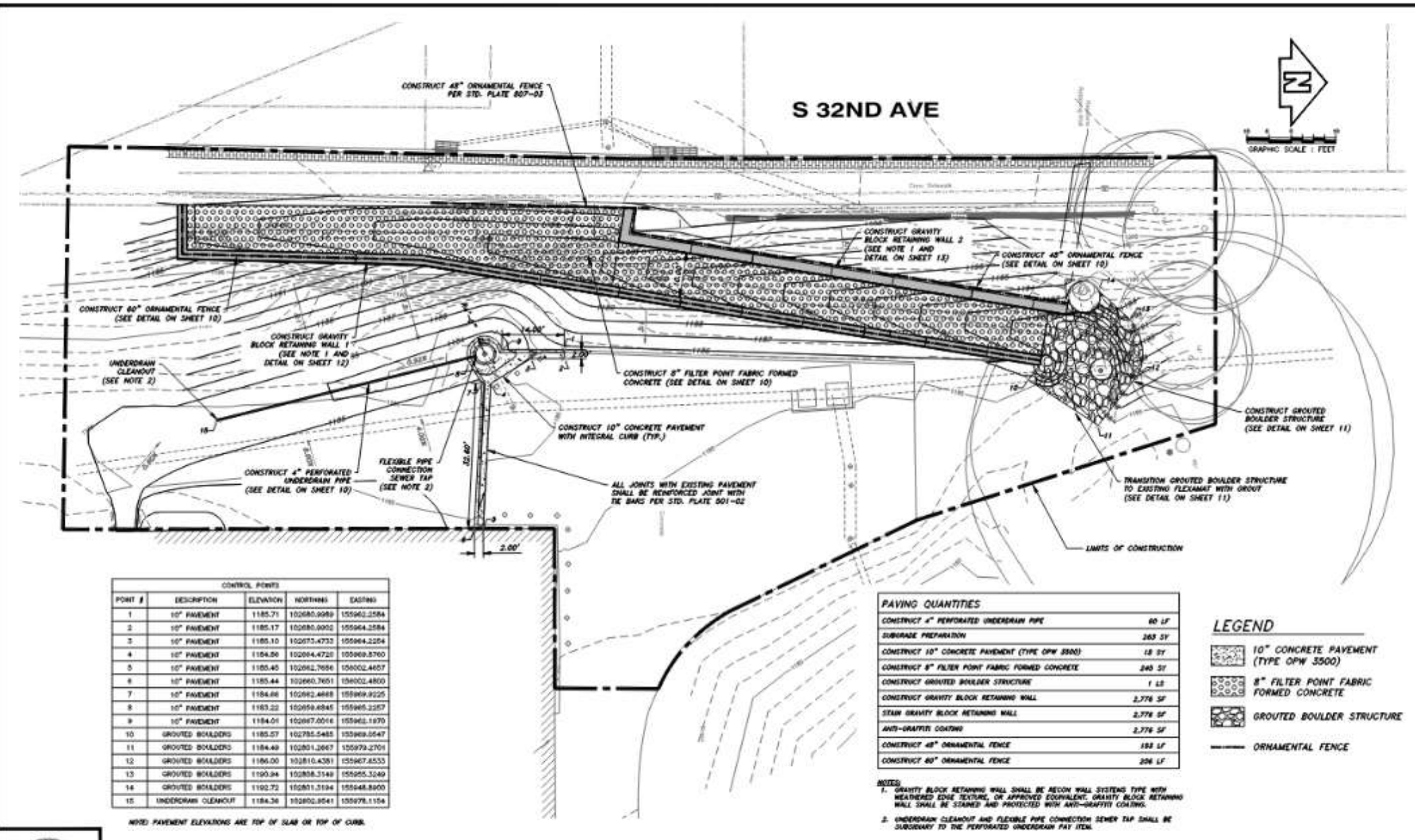
HANSCOM PARK BANK
STABILIZATION

OPW 54513



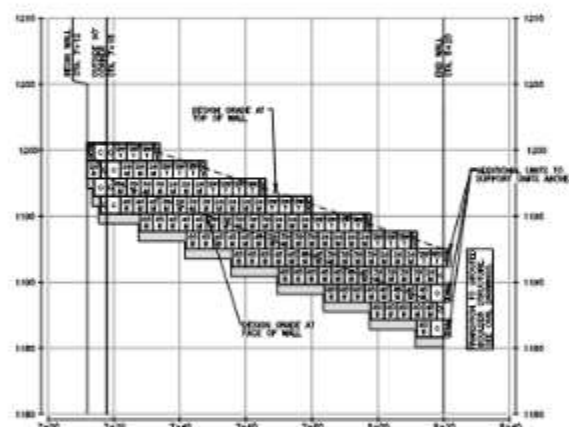
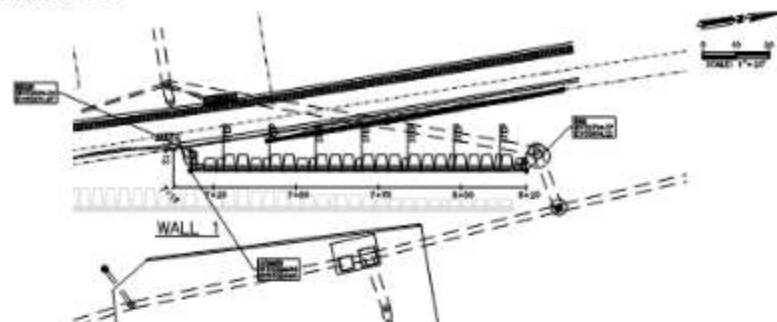
CITY OF OMAHA
PUBLIC WORKS DEPARTMENT
Omaha/Douglas Civic Center
1819 Farnam Street, Suite 600, Omaha, Nebraska 68103

DATE: 4/11/2024
DESIGNED BY: JH
DRAWN BY: JH
SHEET: 1
9 OF 19



1. WALL LAYOUT SHOULD REFLECT BOTTOM COURSE OF WALL.
2. STEPS INDICATE STEPS IN BOTTOM COURSE OF WALL.
3. LAYOUT SHOWING THE LOCATION OF THE STEPS AND DATA ARE ALONG THE FACE OF THE WALL AT THE BOTTOM COURSE.
4. AT STEPS IN THE BOTTOM OF WALL WHERE THE BLOCKS STEP BACK DUE TO INCLINE, RETURN THE BOTTOM COURSE TO THE DESIGN LAYOUT LINE WITHIN 10 TO 20 FEET OF THE STEP.

NOTE - COORDINATE DIMENSIONS OF
OF WALL WITH EXISTING UTILITY.

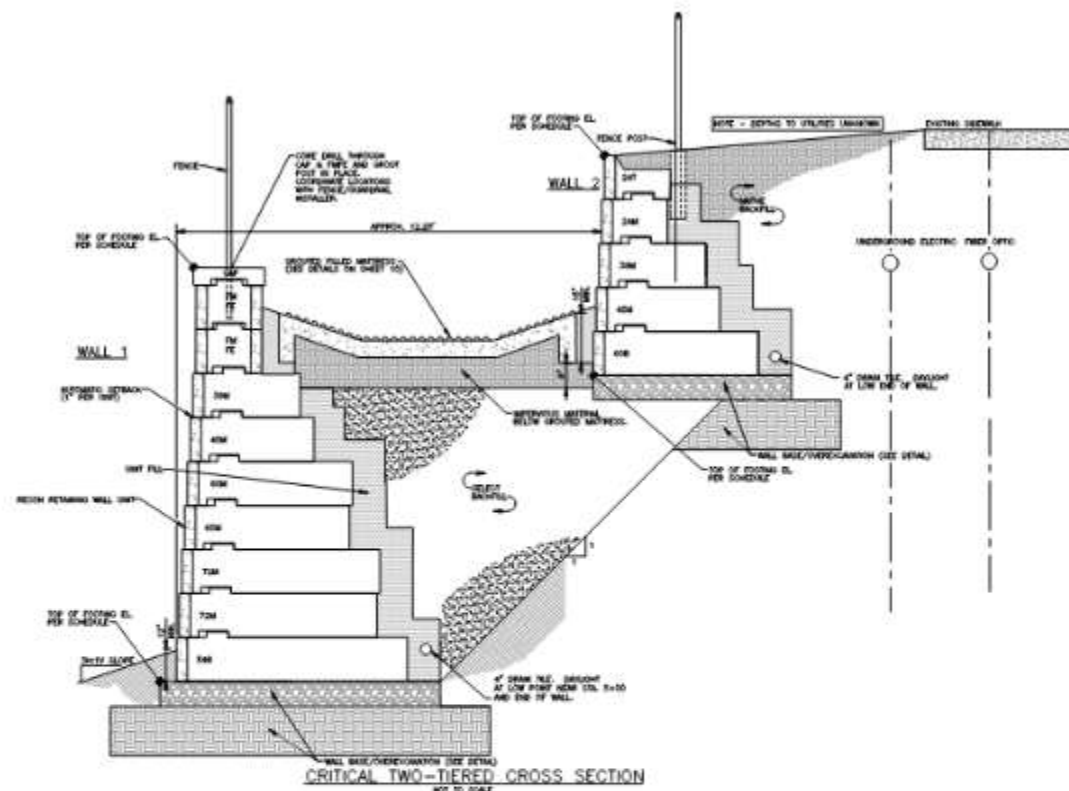


NOTE - WALL THICKNESS SHALL BE INDICATED BY A DIMENSION OF 18 INCHES BELOW THE BOTTOM OF WALL BASE PER SECTION DETAIL, SEE DETAILS.

Facing Schedule Wall 2					
Station		Base	Metric		Value
7+12.5	to 7+14.0	0.087 (3)	7+12.5	to 7+14.0	0.030 (1)
7+14.0	to 7+16.0	0.086 (3)	7+14.0	to 7+16.0	0.007 (1)
7+16.0	to 7+18.0	0.085 (3)	7+16.0	to 7+18.0	0.007 (1)
7+18.0	to 7+20.0	0.083 (3)	7+18.0	to 7+20.0	0.006 (1)
7+20.0	to 7+22.0	0.083 (3)	7+20.0	to 7+22.0	0.006 (1)
7+22.0	to 7+24.0	0.083 (3)	7+22.0	to 7+24.0	0.006 (1)
7+24.0	to 7+26.0	0.083 (3)	7+24.0	to 7+26.0	0.006 (1)
7+26.0	to 7+28.0	0.083 (3)	7+26.0	to 7+28.0	0.006 (1)
7+28.0	to 7+30.0	0.083 (3)	7+28.0	to 7+30.0	0.006 (1)
7+30.0	to 7+32.0	0.083 (3)	7+30.0	to 7+32.0	0.006 (1)
7+32.0	to 7+34.0	0.083 (3)	7+32.0	to 7+34.0	0.006 (1)
7+34.0	to 7+36.0	0.083 (3)	7+34.0	to 7+36.0	0.006 (1)
7+36.0	to 7+38.0	0.083 (3)	7+36.0	to 7+38.0	0.006 (1)
7+38.0	to 7+40.0	0.083 (3)	7+38.0	to 7+40.0	0.006 (1)
7+40.0	to 7+42.0	0.083 (3)	7+40.0	to 7+42.0	0.006 (1)
7+42.0	to 7+44.0	0.083 (3)	7+42.0	to 7+44.0	0.006 (1)
7+44.0	to 7+46.0	0.083 (3)	7+44.0	to 7+46.0	0.006 (1)
7+46.0	to 7+48.0	0.083 (3)	7+46.0	to 7+48.0	0.006 (1)
7+48.0	to 7+50.0	0.083 (3)	7+48.0	to 7+50.0	0.006 (1)
7+50.0	to 7+52.0	0.083 (3)	7+50.0	to 7+52.0	0.006 (1)
7+52.0	to 7+54.0	0.083 (3)	7+52.0	to 7+54.0	0.006 (1)
7+54.0	to 7+56.0	0.083 (3)	7+54.0	to 7+56.0	0.006 (1)
7+56.0	to 7+58.0	0.083 (3)	7+56.0	to 7+58.0	0.006 (1)
7+58.0	to 7+60.0	0.083 (3)	7+58.0	to 7+60.0	0.006 (1)
7+60.0	to 7+62.0	0.083 (3)	7+60.0	to 7+62.0	0.006 (1)
7+62.0	to 7+64.0	0.083 (3)	7+62.0	to 7+64.0	0.006 (1)
7+64.0	to 7+66.0	0.083 (3)	7+64.0	to 7+66.0	0.006 (1)
7+66.0	to 7+68.0	0.083 (3)	7+66.0	to 7+68.0	0.006 (1)
7+68.0	to 7+70.0	0.083 (3)	7+68.0	to 7+70.0	0.006 (1)
7+70.0	to 7+72.0	0.083 (3)	7+70.0	to 7+72.0	0.006 (1)
7+72.0	to 7+74.0	0.083 (3)	7+72.0	to 7+74.0	0.006 (1)
7+74.0	to 7+76.0	0.083 (3)	7+74.0	to 7+76.0	0.006 (1)
7+76.0	to 7+78.0	0.083 (3)	7+76.0	to 7+78.0	0.006 (1)
7+78.0	to 7+80.0	0.083 (3)	7+78.0	to 7+80.0	0.006 (1)
7+80.0	to 7+82.0	0.083 (3)	7+80.0	to 7+82.0	0.006 (1)
7+82.0	to 7+84.0	0.083 (3)	7+82.0	to 7+84.0	0.006 (1)
7+84.0	to 7+86.0	0.083 (3)	7+84.0	to 7+86.0	0.006 (1)
7+86.0	to 7+88.0	0.083 (3)	7+86.0	to 7+88.0	0.006 (1)
7+88.0	to 7+90.0	0.083 (3)	7+88.0	to 7+90.0	0.006 (1)
7+90.0	to 7+92.0	0.083 (3)	7+90.0	to 7+92.0	0.006 (1)
7+92.0	to 7+94.0	0.083 (3)	7+92.0	to 7+94.0	0.006 (1)
7+94.0	to 7+96.0	0.083 (3)	7+94.0	to 7+96.0	0.006 (1)
7+96.0	to 7+98.0	0.083 (3)	7+96.0	to 7+98.0	0.006 (1)
7+98.0	to 7+100.0	0.083 (3)	7+98.0	to 7+100.0	0.006 (1)
7+100.0	to 7+102.0	0.083 (3)	7+100.0	to 7+102.0	0.006 (1)
7+102.0	to 7+104.0	0.083 (3)	7+102.0	to 7+104.0	0.006 (1)
7+104.0	to 7+106.0	0.083 (3)	7+104.0	to 7+106.0	0.006 (1)
7+106.0	to 7+108.0	0.083 (3)	7+106.0	to 7+108.0	0.006 (1)
7+108.0	to 7+110.0	0.083 (3)	7+108.0	to 7+110.0	0.006 (1)
7+110.0	to 7+112.0	0.083 (3)	7+110.0	to 7+112.0	0.006 (1)
7+112.0	to 7+114.0	0.083 (3)	7+112.0	to 7+114.0	0.006 (1)
7+114.0	to 7+116.0	0.083 (3)	7+114.0	to 7+116.0	0.006 (1)
7+116.0	to 7+118.0	0.083 (3)	7+116.0	to 7+118.0	0.006 (1)
7+118.0	to 7+120.0	0.083 (3)	7+118.0	to 7+120.0	0.006 (1)
7+120.0	to 7+122.0	0.083 (3)	7+120.0	to 7+122.0	0.006 (1)
7+122.0	to 7+124.0	0.083 (3)	7+122.0	to 7+124.0	0.006 (1)
7+124.0	to 7+126.0	0.083 (3)	7+124.0	to 7+126.0	0.006 (1)
7+126.0	to 7+128.0	0.083 (3)	7+126.0	to 7+128.0	0.006 (1)
7+128.0	to 7+130.0	0.083 (3)	7+128.0	to 7+130.0	0.006 (1)
7+130.0	to 7+132.0	0.083 (3)	7+130.0	to 7+132.0	0.006 (1)
7+132.0	to 7+134.0	0.083 (3)	7+132.0	to 7+134.0	0.006 (1)
7+134.0	to 7+136.0	0.083 (3)	7+134.0	to 7+136.0	0.006 (1)
7+136.0	to 7+138.0	0.083 (3)	7+136.0	to 7+138.0	0.006 (1)
7+138.0	to 7+140.0	0.083 (3)	7+138.0	to 7+140.0	0.006 (1)
7+140.0	to 7+142.0	0.083 (3)	7+140.0	to 7+142.0	0.006 (1)
7+142.0	to 7+144.0	0.083 (3)	7+142.0	to 7+144.0	0.006 (1)
7+144.0	to 7+146.0	0.083 (3)	7+144.0	to 7+146.0	0.006 (1)
7+146.0	to 7+148.0	0.083 (3)	7+146.0	to 7+148.0	0.006 (1)
7+148.0	to 7+150.0	0.083 (3)	7+148.0	to 7+150.0	0.006 (1)
7+150.0	to 7+152.0	0.083 (3)	7+150.0	to 7+152.0	0.006 (1)
7+152.0	to 7+154.0	0.083 (3)	7+152.0	to 7+154.0	0.006 (1)
7+154.0	to 7+156.0	0.083 (3)	7+154.0	to 7+156.0	0.006 (1)
7+156.0	to 7+158.0	0.083 (3)	7+156.0	to 7+158.0	0.006 (1)
7+158.0	to 7+160.0	0.083 (3)	7+158.0	to 7+160.0	0.006 (1)
7+160.0	to 7+162.0	0.083 (3)	7+160.0	to 7+162.0	0.006 (1)
7+162.0	to 7+164.0	0.083 (3)	7+162.0	to 7+164.0	0.006 (1)
7+164.0	to 7+166.0	0.083 (3)	7+164.0	to 7+166.0	0.006 (1)
7+166.0	to 7+168.0	0.083 (3)	7+166.0	to 7+168.0	0.006 (1)
7+168.0	to 7+170.0	0.083 (3)	7+168.0	to 7+170.0	0.006 (1)
7+170.0	to 7+172.0	0.083 (3)	7+170.0	to 7+172.0	0.006 (1)
7+172.0	to 7+174.0	0.083 (3)	7+172.0	to 7+174.0	0.006 (1)
7+174.0	to 7+176.0	0.083 (3)	7+174.0	to 7+176.0	0.006 (1)
7+176.0	to 7+178.0	0.083 (3)	7+176.0	to 7+178.0	0.006 (1)
7+178.0	to 7+180.0	0.083 (3)	7+178.0	to 7+180.0	0.006 (1)
7+180.0	to 7+182.0	0.083 (3)	7+180.0	to 7+182.0	0.006 (1)
7+182.0	to 7+184.0	0.083 (3)	7+182.0	to 7+184.0	0.006 (1)
7+184.0	to 7+186.0	0.083 (3)	7+184.0	to 7+186.0	0.006 (1)
7+186.0	to 7+188.0	0.083 (3)	7+186.0	to 7+188.0	0.006 (1)
7+188.0	to 7+190.0	0.083 (3)	7+188.0	to 7+190.0	0.006 (1)
7+190.0	to 7+192.0	0.083 (3)	7+190.0	to 7+192.0	0.006 (1)
7+192.0	to 7+194.0	0.083 (3)	7+192.0	to 7+194.0	0.006 (1)
7+194.0	to 7+196.0	0.083 (3)	7+194.0	to 7+196.0	0.006 (1)
7+196.0	to 7+198.0	0.083 (3)	7+196.0	to 7+198.0	0.006 (1)
7+198.0	to 7+200.0	0.083 (3)	7+198.0	to 7+200.0	0.006 (1)
7+200.0	to 7+202.0	0.083 (3)	7+200.0	to 7+202.0	0.006 (1)
7+202.0	to 7+204.0	0.083 (3)	7+202.0	to 7+204.0	0.006 (1)
7+204.0	to 7+206.0	0.083 (3)	7+204.0	to 7+206.0	0.006 (1)
7+206.0	to 7+208.0	0.083 (3)	7+206.0	to 7+208.0	0.006 (1)
7+208.0	to 7+210.0	0.083 (3)	7+208.0	to 7+210.0	0.006 (1)
7+210.0	to 7+212.0	0.083 (3)	7+210.0	to 7+212.0	0.006 (1)
7+212.0	to 7+214.0	0.083 (3)	7+212.0	to 7+214.0	0.006 (1)
7+214.0	to 7+216.0	0.083 (3)	7+214.0	to 7+216.0	0.006 (1)
7+216.0	to 7+218.0	0.083 (3)	7+216.0	to 7+218.0	0.006 (1)
7+218.0	to 7+220.0	0.083 (3)	7+218.0	to 7+220.0	0.006 (1)
7+220.0	to 7+222.0	0.083 (3)	7+220.0	to 7+222.0	0.006 (1)
7+222.0	to 7+224.0	0.083 (3)	7+222.0	to 7+224.0	0.006 (1)
7+224.0	to 7+226.0	0.083 (3)	7+224.0	to 7+226.0	0.006 (1)
7+226.0	to 7+228.0	0.083 (3)	7+226.0	to 7+228.0	0.006 (1)
7+228.0	to 7+230.0	0.083 (3)	7+228.0	to 7+230.0	0.006 (1)
7+230.0	to 7+232.0	0.083 (3)	7+230.0	to 7+232.0	0.006 (1)
7+232.0	to 7+234.0	0.083 (3)	7+232.0	to 7+234.0	0.006 (1)
7+234.0	to 7+236.0	0.083 (3)	7+234.0	to 7+236.0	0.006 (1)
7+236.0	to 7+238.0	0.083 (3)	7+236.0	to 7+238.0	0.006 (1)
7+238.0	to 7+240.0	0.083 (3)	7+238.0	to 7+240.0	0.006 (1)
7+240.0	to 7+242.0	0.083 (3)	7+240.0	to 7+242.0	0.006 (1)
7+242.0	to 7+244.0	0.083 (3)	7+242.0	to 7+244.0	0.006 (1)
7+244.0	to 7+246.0	0.083 (3)	7+244.0	to 7+246.0	0.006 (1)
7+246.0	to 7+248.0	0.083 (3)	7+246.0	to 7+248.0	0.006 (1)
7+248.0	to 7+250.0	0.083 (3)	7+248.0	to 7+250.0	0.006 (1)
7+250.0	to 7+252.0	0.083 (3)	7+250.0	to 7+252.0	0.006 (1)
7+252.0	to 7+254.0	0.083 (3)	7+252.0	to 7+254.0	0.006 (1)
7+254.0	to 7+256.0	0.083 (3)	7+254.0	to 7+256.0	0.006 (1)
7+256.0	to 7+258.0	0.083 (3)	7+256.0	to 7+258.0	0.006 (1)
7+258.0	to 7+260.0	0.083 (3)	7+258.0	to 7+260.0	0.006 (1)
7+260.0	to 7+262.0	0.083 (3)	7+260.0	to 7+262.0	0.006 (1)
7+262.0	to 7+264.0	0.083 (3)	7+262.0	to 7+264.0	0.006 (1)
7+264.0	to 7+266.0	0.083 (3)	7+264.0	to 7+266.0	0.006 (1)
7+266.0	to 7+268.0	0.083 (3)	7+266.0	to 7+268.0	0.006 (1)
7+268.0	to 7+270.0	0.083 (3)	7+268.0	to 7+270.0	0.006 (1)
7+270.0	to 7+272.0	0.083 (3)	7+270.0	to 7+272.0	0.006 (1)
7+272.0	to 7+274.0	0.083 (3)	7+272.0	to 7+274.0	0.006 (1)
7+274.0	to 7+276.0	0.083 (3)	7+274.0	to 7+276.0	0.006 (1)
7+276.0	to 7+278.0	0.083 (3)	7+276.0	to 7+278.0	0.006 (1)
7+278.0	to 7+280.0	0.083 (3)	7+278.0	to 7+280.0	0.006 (1)
7+280.0	to 7+282.0	0.083 (3)	7+280.0	to 7+282.0	0.006 (1)
7+282.0	to 7+284.0	0.083 (3)	7+282.0	to 7+284.0	0.006 (1)
7+284.0	to 7+286.0	0.083 (3)	7+284.0	to 7+286.0	0.006 (1)
7+286.0	to 7+288.0	0.083 (3)	7+286.0	to 7+288.0	0.006 (1)
7+288.0	to 7+290.0	0.083 (3)	7+288.0	to 7+290.0	0.006 (1)
7+290.0	to 7+292.0	0.083 (3)	7+290.0	to 7+292.0	0.006 (1)
7+292.0	to 7+294.0	0.083 (3)	7+292.0	to 7+294.0	0.006 (1)
7+294.0	to 7+296.0	0.083 (3)	7+294.0	to 7+296.0	0.006 (1)
7+296.0	to 7+298.0	0.083 (3)	7+296.0	to 7+298.0	0.006 (1)
7+298.0	to 7+300.0	0.083 (3)	7+298.0	to 7+300.0	0.006 (1)
7+300.0	to 7+302.0	0.083 (3)	7+300.0	to 7+302.0	0.006 (1)
7+302.0	to 7+304.0	0.083 (3)	7+302.0	to 7+304.0	0.006 (1)
7+304.0	to 7+306.0	0.083 (3)	7+304.0	to 7+306.0	0.006 (1)
7+306.0	to 7+308.0	0.083 (3)	7+306.0	to 7+308.0	0.006 (1)
7+308.0	to 7+310.0	0.083 (3)	7+308.0	to 7+310.0	0.006 (1)
7+310.0	to 7+312.0	0.083 (3)	7+310.0	to 7+312.0	0.006 (1)
7+312.0	to 7+314.0	0.083 (3)	7+312.0	to 7+314.0	0.006 (1)
7+314.0	to 7+316.0	0.083 (3)	7+314.0	to 7+316.0	0.006 (1)
7+316.0	to 7+318.0	0.083 (3)	7+316.0	to 7+318.0	0.006 (1)
7+318.0	to 7+320.0	0.083 (3)	7+318.0	to 7+320.0	0.006 (1)
7+320.0	to 7+322.0	0.083 (3)	7+320.0	to 7+322.0	0.006 (1)
7+322.0	to 7+324.0	0.083 (3)	7+322.0	to 7+324.0	0.006 (1)
7+324.0	to 7+326.0				

ELEMENTAL ANAL.
Calcd. for $C_{10}H_8O$:
C, 90.6%; H, 5.7%.

Approximate Quantities		
West 2		
Total Fencing (ft)	75.5	
Perimeter (ft)	5	
Area (sq ft)	10	100%
10' Basic (100)	10	100%
10' Basic (100)	5	2%
10' Basic (100)	1	1%
10' Basic (100)	2	1%
10' Basic (100)	20	10%
10' Basic (100)	20	10%
10' Basic (100)	21	10%
10' Basic (100)	1	2%
10' Basic (100)	1	0%
10' Basic (100)	21	10%
10' Basic (100)	1	0%
10' Basic (100)	8	0%
10' Basic (100)	8	7%
10' Basic (100)	5	2%



NE Free #CA-200804
1-800-855-8888
Circle 10 on Reader Service Card
www.fairfaxva.gov

REVISIONS

**RETAINING
WALL-WALL 2
LAYOUT &
ELEVATION**

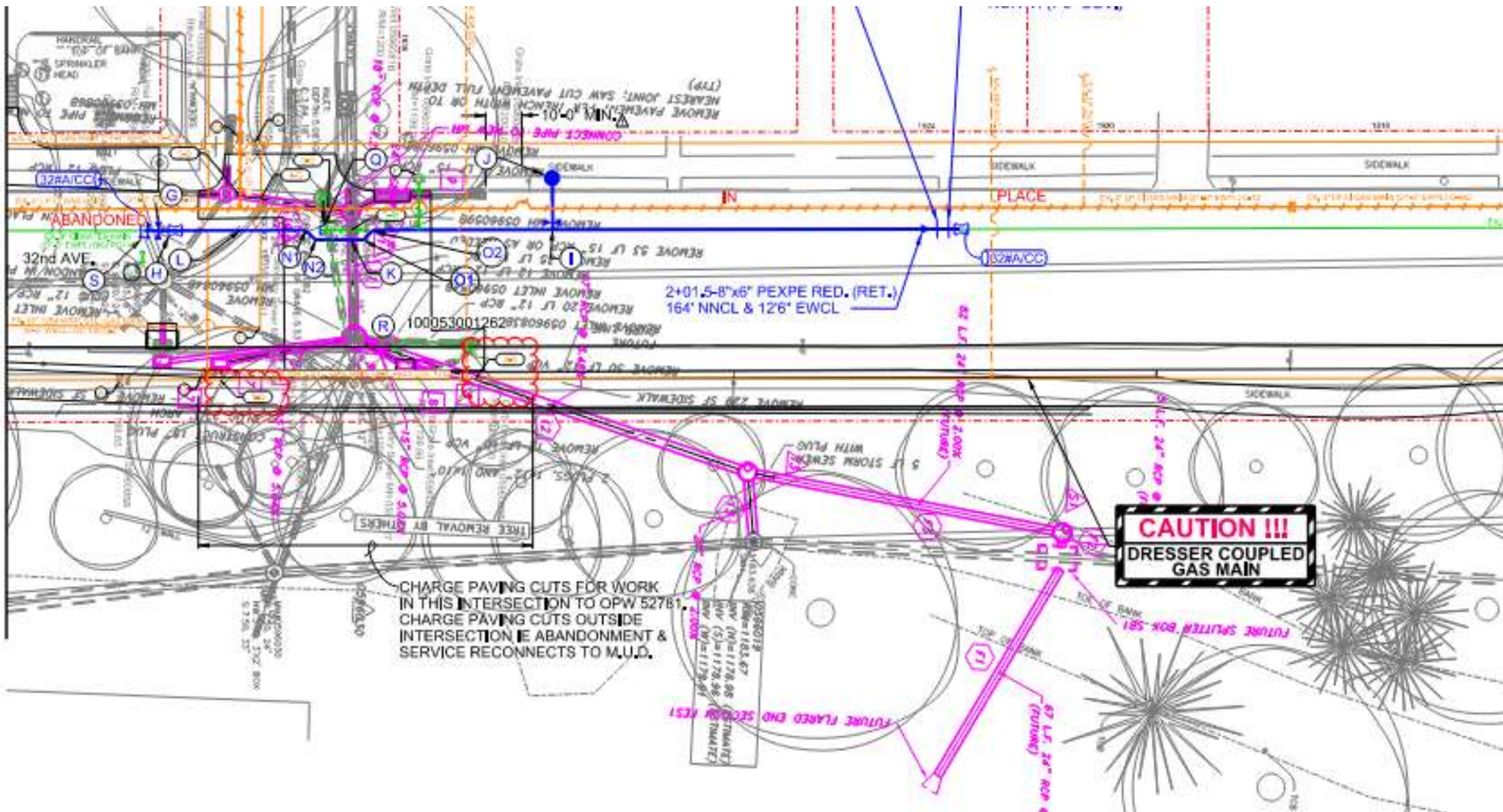
HANSCOM PARK BANK
STABILIZATION
OPW 54513



CITY OF OMAHA
PUBLIC WORKS DEPARTMENT
Omaha/Douglas Civic Center
1815 Farnam Street, Suite 600, Omaha, Nebraska 68183

ISSUE DATE:
4/31/2024
DESIGN BY:
DEP
DRAWN BY:
DEP
SHEET
13 OF 15

MATCHLINE "D-D" SEE PAGE P4



Project Construction



Known risks

Hidden surprises

Retaining wall

Fabric formed concrete flume

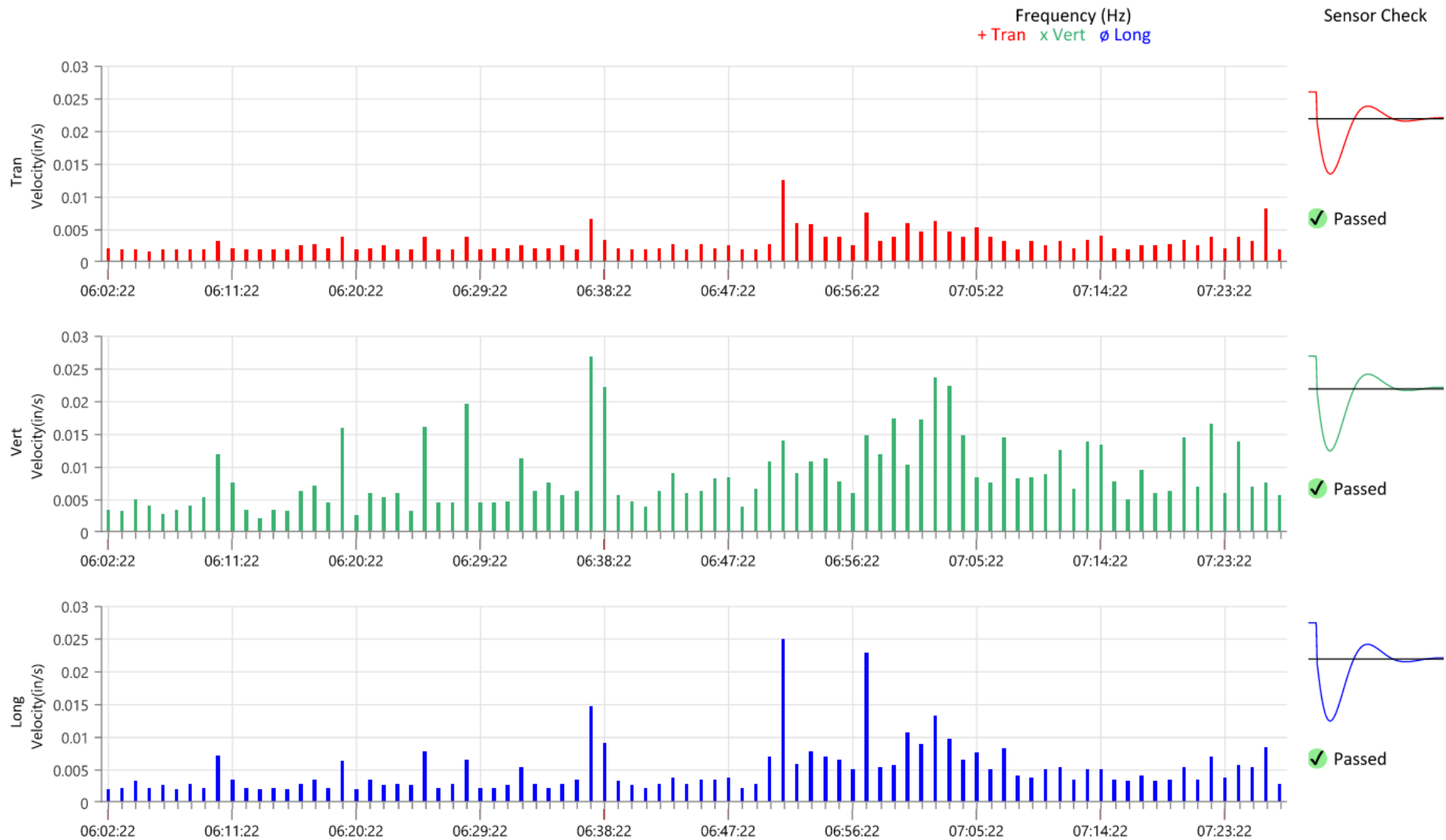
Grouted boulder energy dissipation

Construction Team











FRANCES ST.

SCOTT & HILLS
SUB. OF LOT 2
WINDSOR PLACE

PART OF LOT 2
WINDSOR PLACE

...AT 32ND. AVE.

32 NO. 21

ED. CREIGHTON

Hanscom
Park

M.H. $\Delta = 9+36.8$
 $\Delta = 18' R.$

M.H. 20.4 No. of E. FRANCES
17.4 W. of E.P.L.
WASHED O

H. 20.4 No. of Φ FRAMES
17.4 W. of E.P.L.
21" Y.C.P. BUILT (WASHED OUT)

210.0
-8+04.64=M.H

$\theta = 67^\circ$ DIAM.

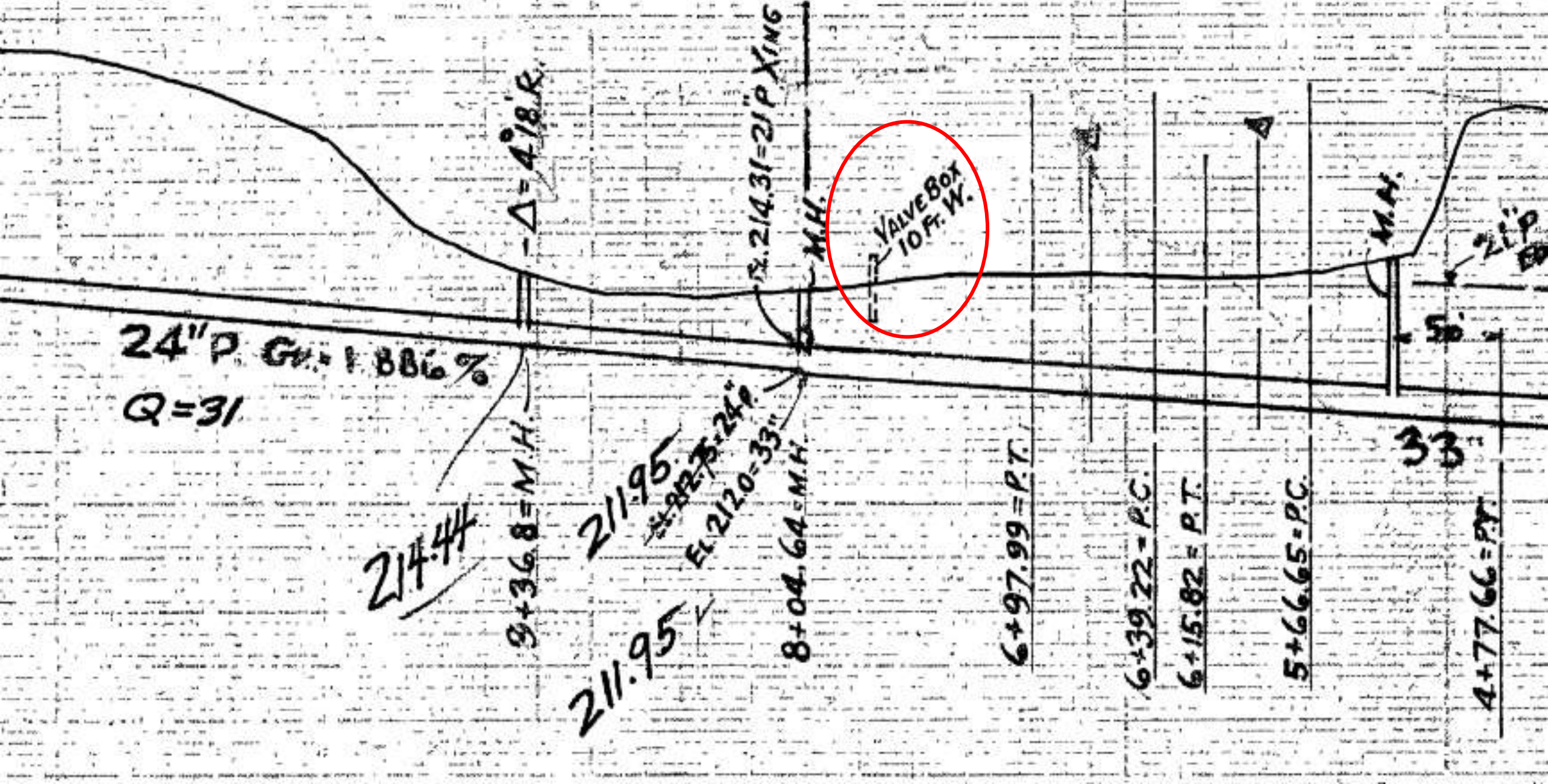
33" DIAM.

208.59 8" W.M.

21" P

B.2397-61

-21-



24" P. Gr. = 1.886%
Q=31

$\Delta = 4.18'$

9+36.8 = M.H.

214.31 = 21" P. XING

M.H.

VALVE BOX
10 FT. W.

M.H.

21" P. ED

50'

33"

214.44

211.95
211.95
212.95
212.0 = 33"
8+04.64 = M.H.

6+97.99 = P.T.

6+39.22 = P.C.

6+15.82 = P.T.

5+66.65 = P.C.

4+77.66 = P.T.



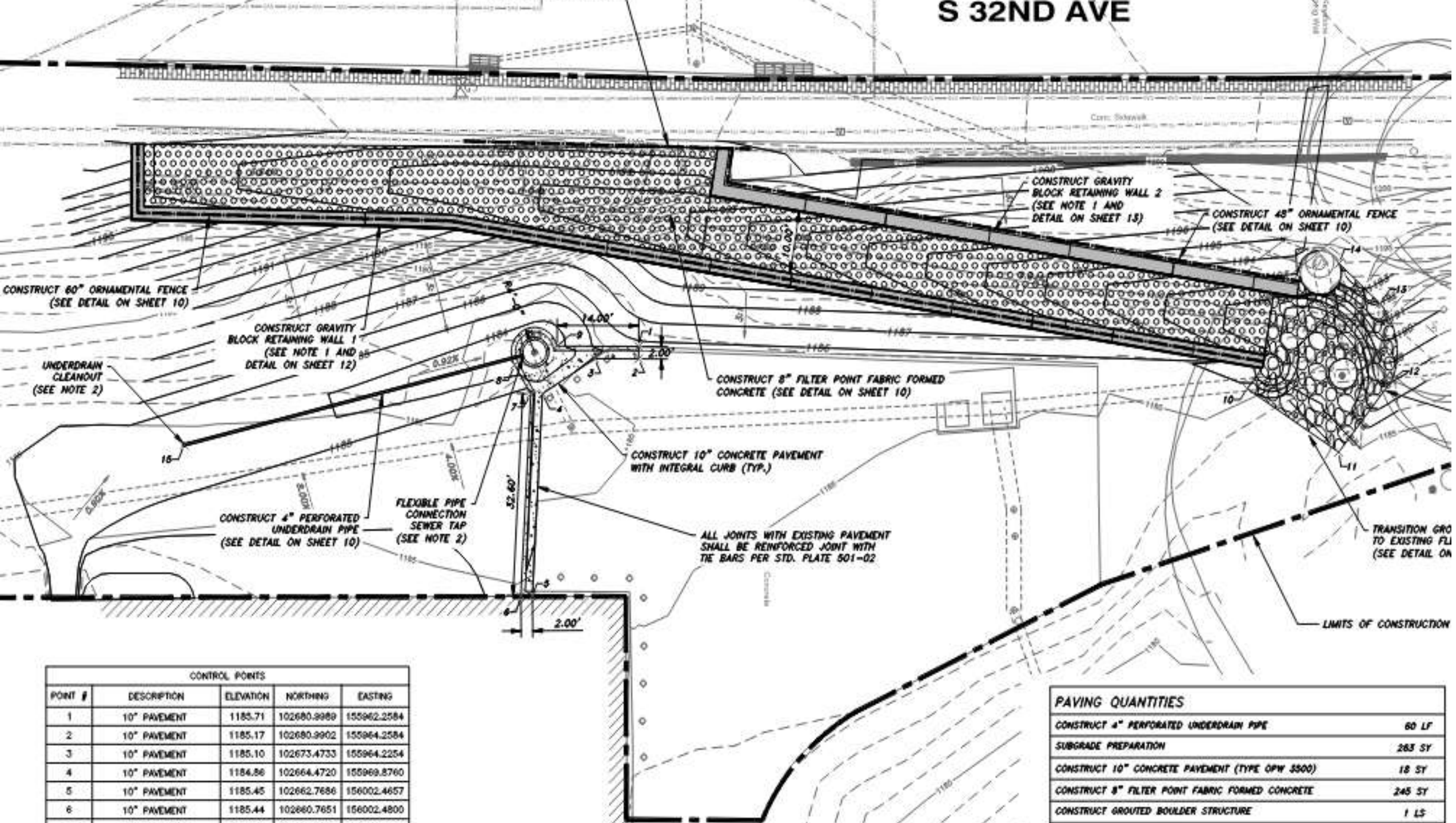








S 32ND AVE



CONTROL POINTS				
POINT #	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	10" PAVEMENT	1185.71	102680.9989	155962.2584
2	10" PAVEMENT	1185.17	102680.9902	155964.2584
3	10" PAVEMENT	1185.10	102673.4733	155964.2254
4	10" PAVEMENT	1184.86	102664.4720	155969.8760
5	10" PAVEMENT	1185.45	102662.7686	156002.4657
6	10" PAVEMENT	1185.44	102660.7651	156002.4800

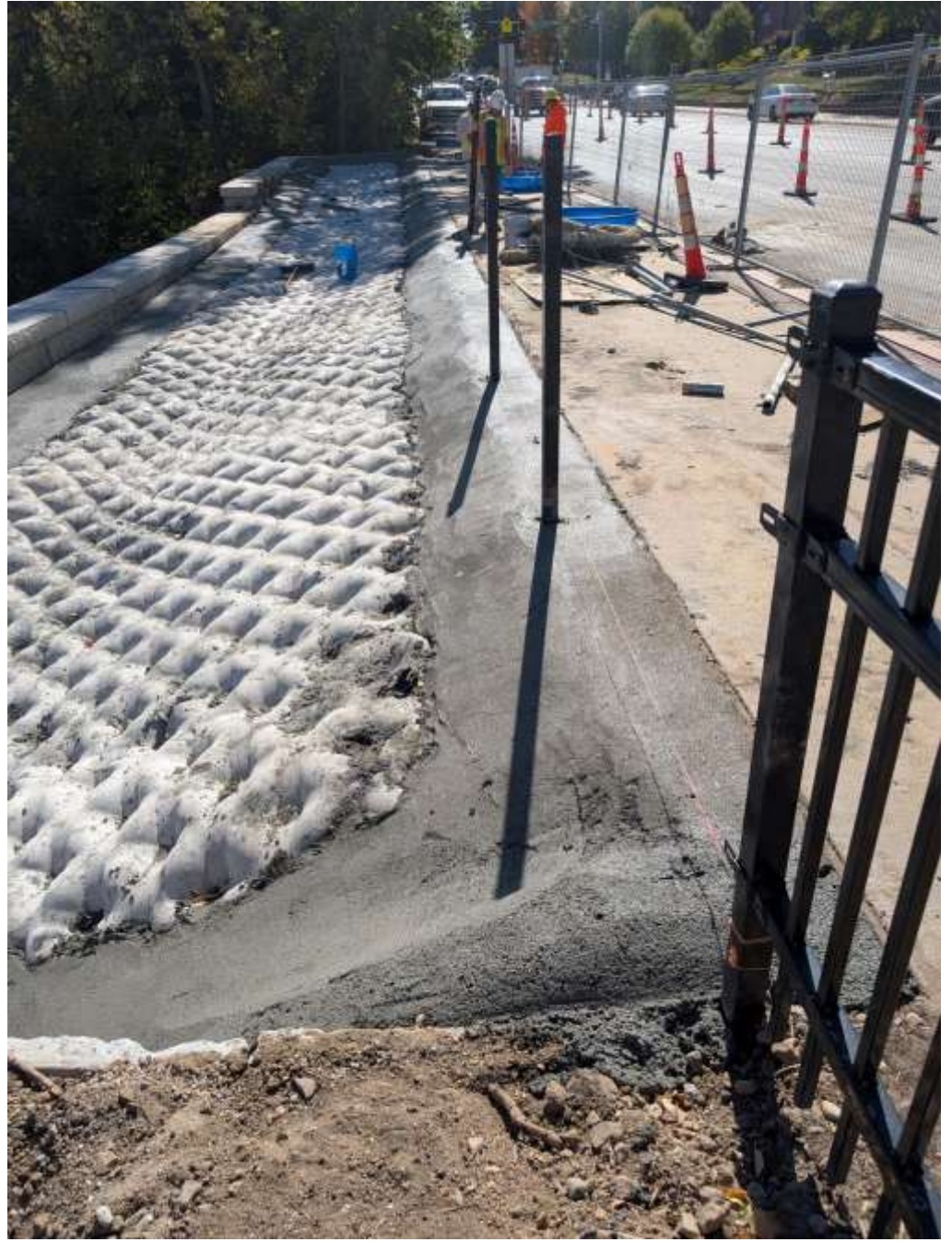
PAVING QUANTITIES	
CONSTRUCT 4" PERFORATED UNDERDRAIN PIPE	60 LF
SUBGRADE PREPARATION	263 SY
CONSTRUCT 10" CONCRETE PAVEMENT (TYPE OPW 3500)	18 SY
CONSTRUCT 8" FILTER POINT FABRIC FORMED CONCRETE	245 SY
CONSTRUCT GROUTED BOULDER STRUCTURE	1 LS







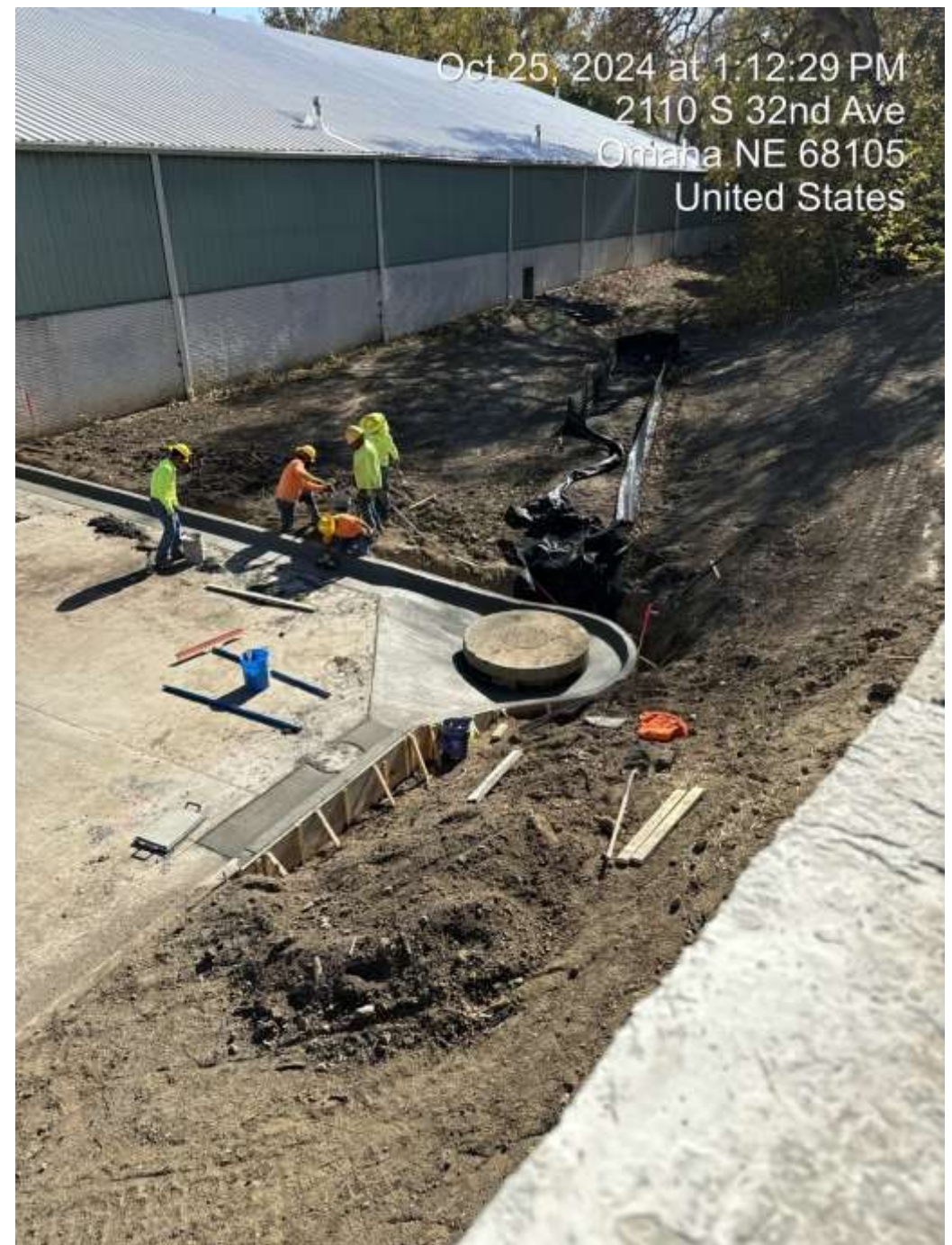


















Questions

