Condition Assessment, Repairs, and Rehabilitation on PVSC's Aging [110(+) Year Old] Infrastructure and Assets

Main Interceptor Venturi Flow Meters Rehabilitation (B253B)

Eric Granholm, P.E., ENV SP | Senior Civil Engineer I
(P) 973-817-5802 | email: EGranholm@pvsc.com

600 Wilson Avenue, Newark, New Jersey 07105
P (973) 344-1800
www.nj.gov/pvsc

Passaic Valley Sewerage Commission

"Protecting Public Health and the Environment"

October 22, 2025

Contract No. B253B

Main Interceptor Venturi Flow Meters Rehabilitation Project

Passaic Valley Sewerage Commission

600 Wilson Avenue, Newark, New Jersey 07105
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"Protecting Public Health and the Environment"

October 22, 2025

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Topics for Discussion
  * Background
  * Existing Layout and Configuration
  * Existing Venturi Flow Meter Manufacturer's Information
  * Meter Parameters
  * Design Drawings
  * Adjacent Sewer Hydraulics
  * Construction Activities
    * Construction Photographs
  * Inspections, Data, Reporting, and Results

October 22, 2025

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* **Second River Yard – Venturi Flow Meters, Newark, NJ**
  * Three (3) venturi flow meters
  * Assets installed between late 1910s and early 1920s
* **Passaic Meter Chamber – Venturi Flow Meters, Passaic, NJ**
  * Two (2) venturi flow meters
  * Assets installed between late 1910s and early 1920s
* **Paterson Meter Chamber – Venturi Flow Meters, Paterson, NJ**
  * One (1) venturi flow meter
  * Assets installed between late 1910s and early 1920s
* Engineer: CDM SMITH

* Contractor: Railroad Construction Company, Inc.
  * Construction Cost: $6,083,600.00

October 22, 2025

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Second River Yard – Venturi Flow Meters, Newark, NJ
  * Quantity: 3
  * Size: 66” x 36” (H.S. Component)
    * H.S. means ‘Herschel Standard’ Venturi Proportions
  * Serial No.: 3912, 3913, 3914
  * Date Shipped / Installed: 1914

* Engineer: CDM SMITH

* Contractor: Railroad Construction Company, Inc.

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Passaic Meter Chamber – Venturi Flow Meters, Passaic, NJ
  * Quantity: 2
  * Size: 66” x 36” (H.S. Component)
    * H.S. means ‘Herschel Standard’ Venturi Proportions
  * Serial No.: 3776, 3777
  * Date Shipped / Installed: 1914

* Engineer: CDM SMITH

* Contractor: Railroad Construction Company, Inc.

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Paterson Meter Chamber – Venturi Flow Meters, Paterson, NJ
  * Quantity: 1
  * Size: 66” x 36” (H.S. Component)
    * H.S. means ‘Herschel Standard’ Venturi Proportions
  * Serial No.: 2543
  * Date Shipped / Installed: 1912

* Engineer: CDM SMITH

* Contractor: Railroad Construction Company, Inc.

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Existing Layout and Configuration – Original Design Drawings

  * Second River Yard Meter Chamber
    * Original Design Drawings, dated May 1, 1914

  * Passaic Meter Chamber
    * Original Design Drawings, dated March 3, 1914

  * Paterson Meter Chamber
    * Original Design Drawings, dated May 1, 1912

Contract No. 46

State of New Jersey

Passaic Valley Sewerage Commissioners

MAIN INTERCEPTING SEWER

Contract Drawings—Part of Section 9

SECOND RIVER CROSSING & NEWARK METER

NEWARK & BELLEVILLE

May 1, 1914

The Contract Drawings for Part of Section 9 consist of this title sheet and 7 sheets of drawings bearing accession numbers—B1900 to B1907 inclusive.

Chief Engineer.

Principal Assistant Engineer.

Acc. No. B 1900

CONTRACT No. 46—SHEET 1.
SHEETS IN SET, 7.

NOTE:—The borings and indications of pipes and other underground structures are supposed to be approximately correct, but should they be found to be otherwise the Contractor shall have no claim on that account, it being expressly understood that the Commissioners do not warrant the plot to be approximately correct.

The precise character of the foundation and the section at any given point cannot be determined in advance but will be decided upon by the Engineer as occasion demands.

The sewer line may be moved within the limits of the street and takings wherever thought best by the Engineer.

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. Comp. Book
Myron G. Marcus
Division Engineer. Assistant Engineer.

SCALES
Horizontal - 1 in. = 40 ft.
0 50 100 150 200
Vertical - 1 in. = 8 ft.
0 5 10 15 20 25 30 35 40

Wm. M. Brown
Chief Engineer
Wm. Lavine Taylor
Principal Assistant Engineer

State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS—PART OF SECTION 9
SECOND RIVER CROSSING & NEWARK METER
NEWARK & BELLEVILLE
PLAN AND PROFILE
MAY 1, 1914

Acc. No. B 1901

CONTRACT No. 46—SHEET 2.
SHEETS IN SET, 7.

Section on C-D

Scale-$\frac{1}{4}$"=1 Ft.

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—PART OF SECTION 9

SECOND RIVER CROSSING & NEWARK METER

NEWARK & BELLEVILLE

VENTURI METER CHAMBER

SECTIONAL PLAN

MAY 1, 1914

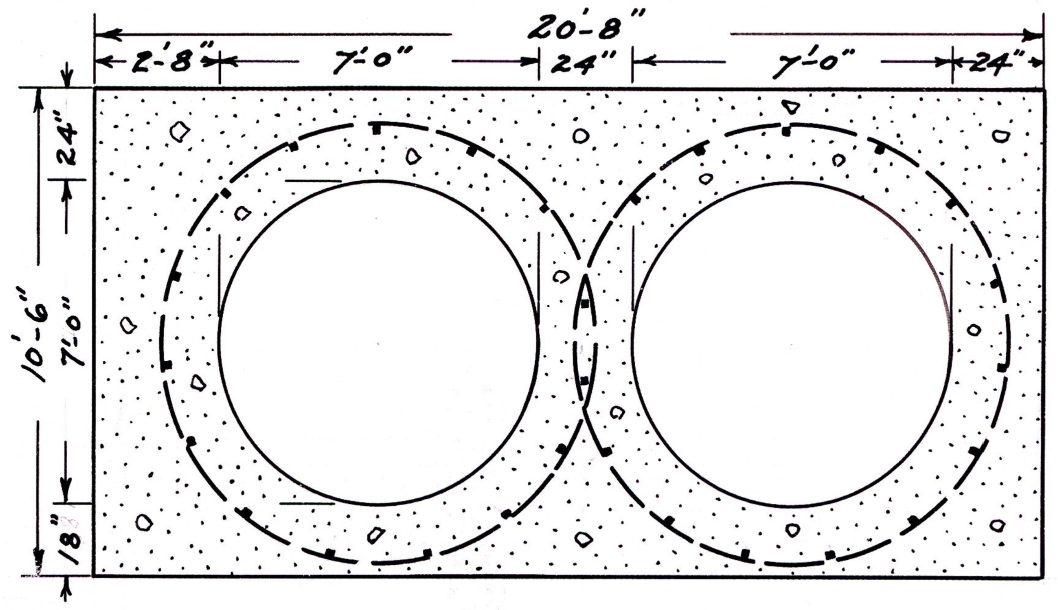
Note:
These Structures were built as shown on this plan.

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. Comp. BK
Myron G. Marcus
Division Engineer. Assistant Engineer

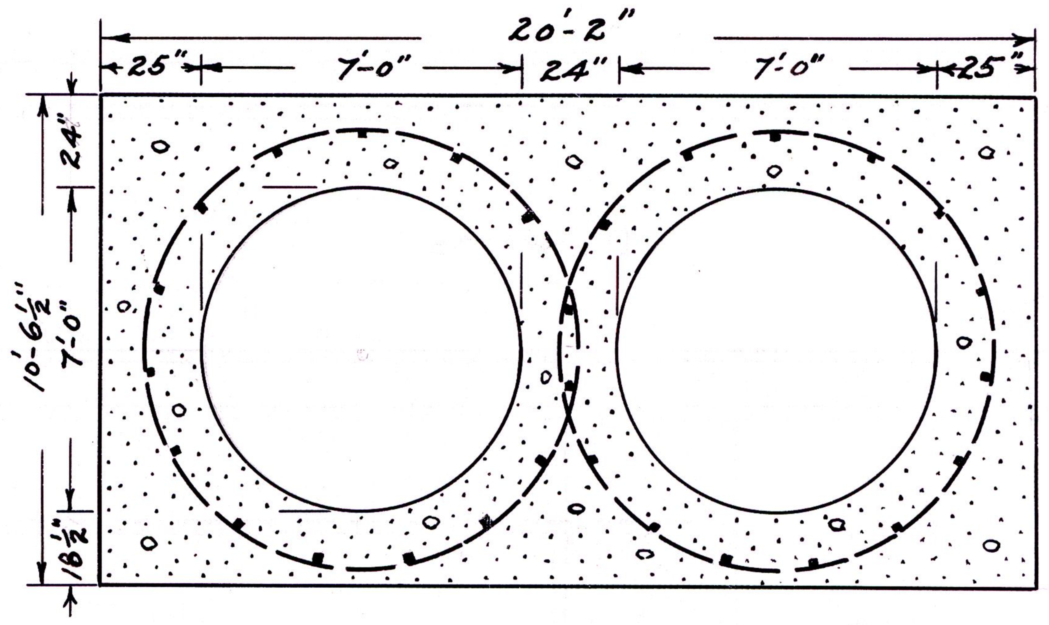
Wm. M. Brown
Chief Engineer

Wm. Gavin Taylor
Principal Assistant Engineer

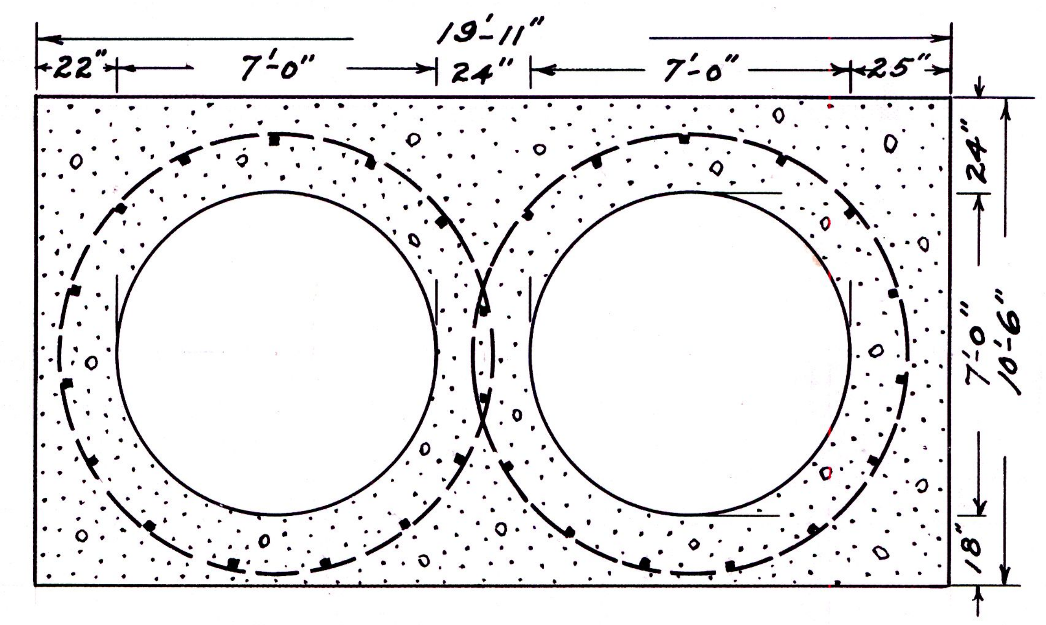
Acc. No. B 1902



Maximum. Sta. 3+00.



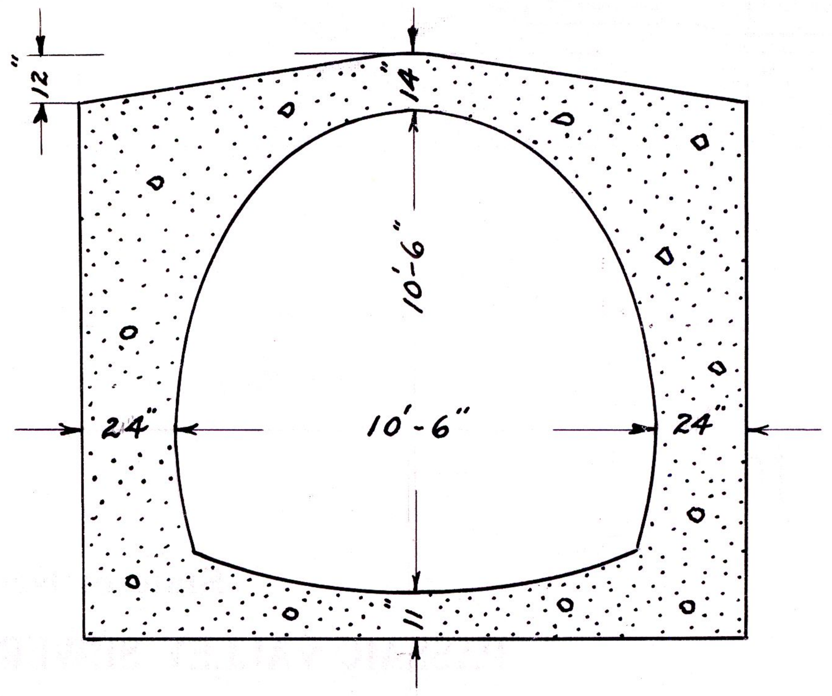
Average.



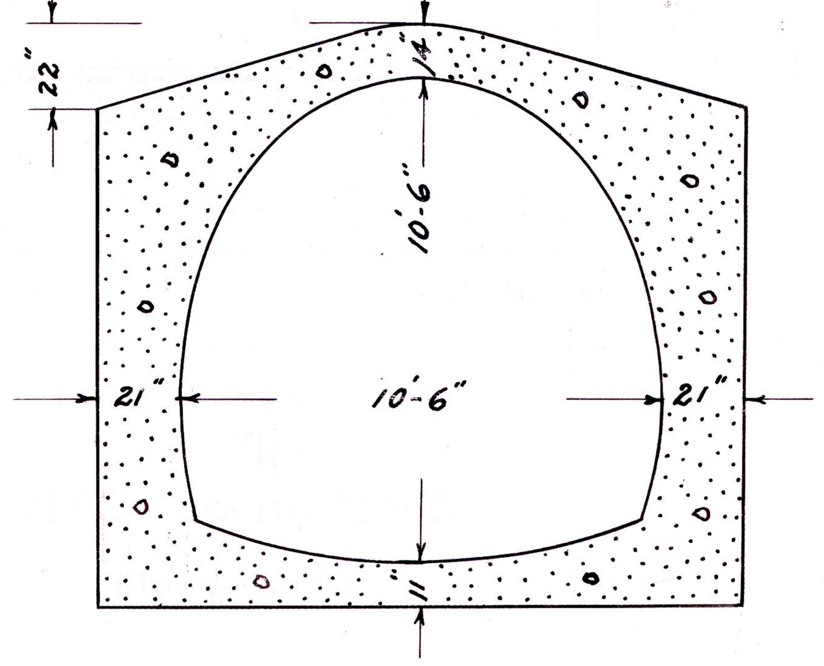
Minimum Sta. 3+37.5.

SECTIONS OF 7'-0" TWIN CONDUITS.

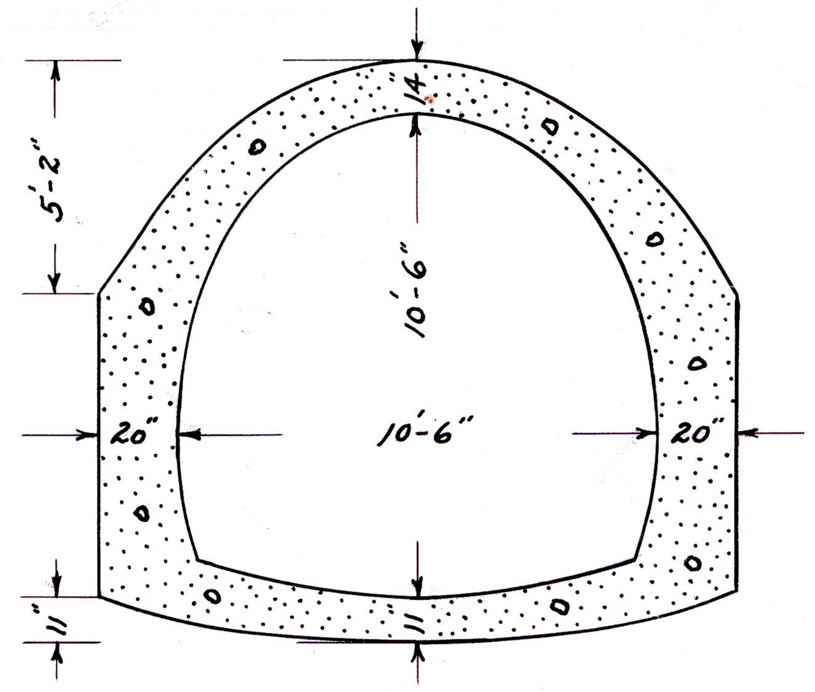
SECTIONS OF 10'-6" SEWER.



Maximum. Sta. 0+50.



Average.



Minimum. Sta. 5+12.5

Scale 1 in. = 4 ft.

CONTRACT No. 46—SHEET 3.
SHEETS IN SET, 7.

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—PART OF SECTION 9

SECOND RIVER CROSSING & NEWARK METER

NEWARK & BELLEVILLE

VENTURI METER CHAMBER

LONGITUDINAL SECTION

MAY 1, 1914

Chief Engineer

Principal Assistant Engineer

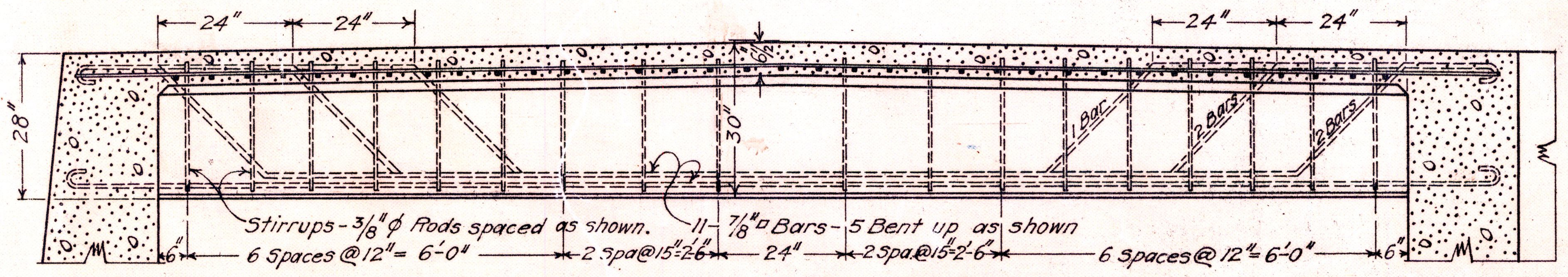
Acc. No. B 1903

CONTRACT No. 46—SHEET 4.
SHEETS IN SET, 7.

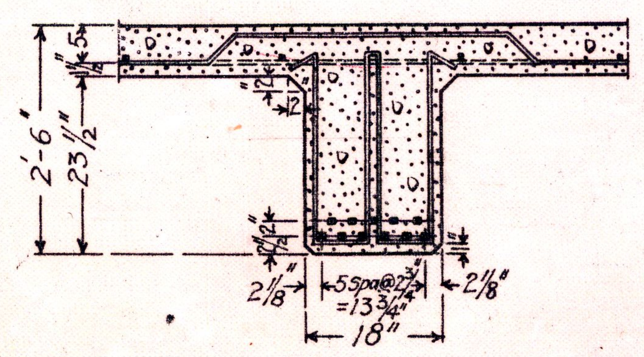
Note:
These Structures were built as shown on this plan.

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. Comp. BK.
Myron S. Marm
Division Engineer. Assistant Engineer

Plan
Scale-¼"=1Ft.



Detail of Girders-Marked G₁
Scale-½in.=1ft.



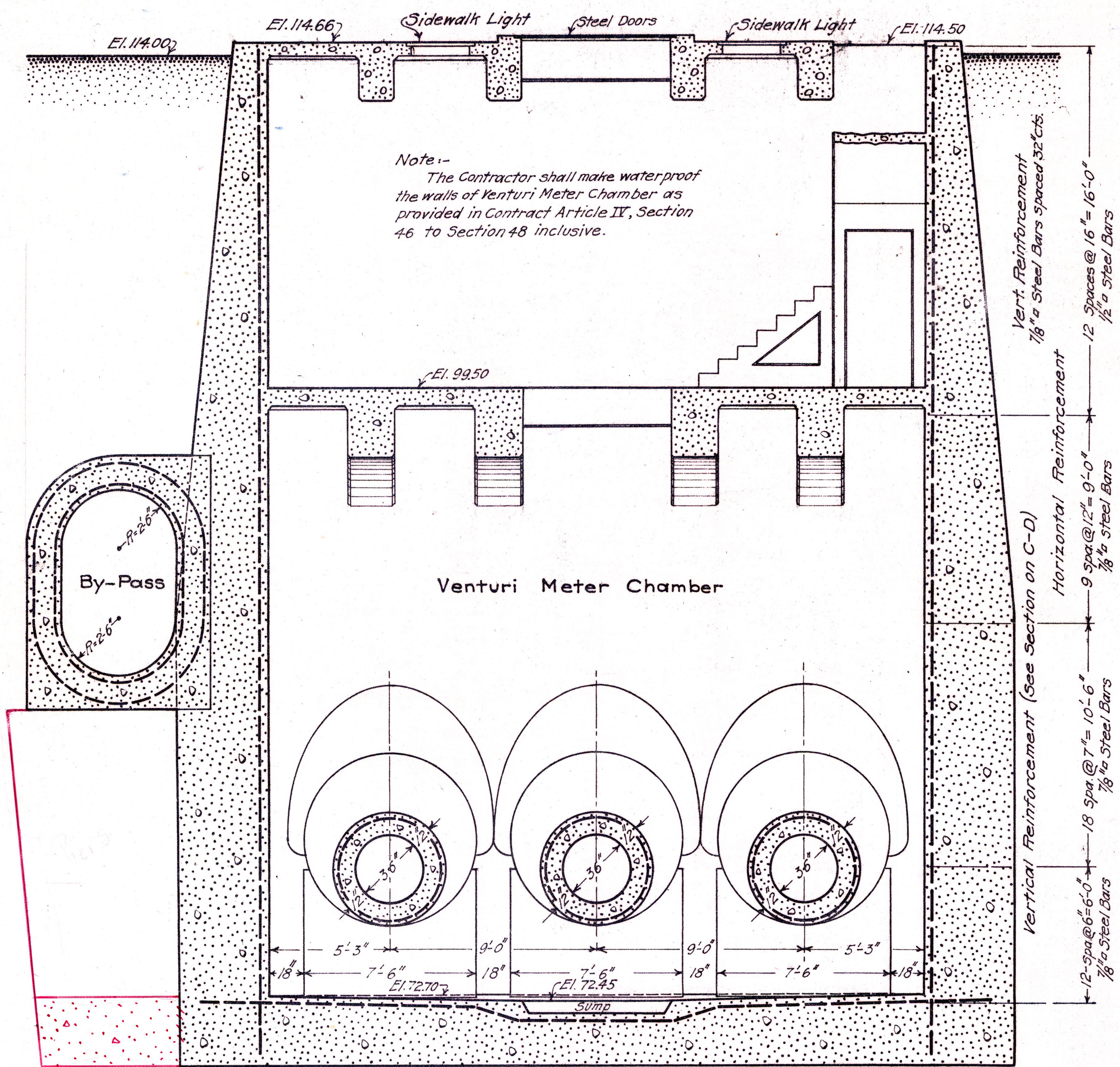
Section of Girder G₁

State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS—PART OF SECTION 9
SECOND RIVER CROSSING & NEWARK METER
NEWARK & BELLEVILLE
VENTURI METER CHAMBER
TOP PLAN
MAY 1, 1914

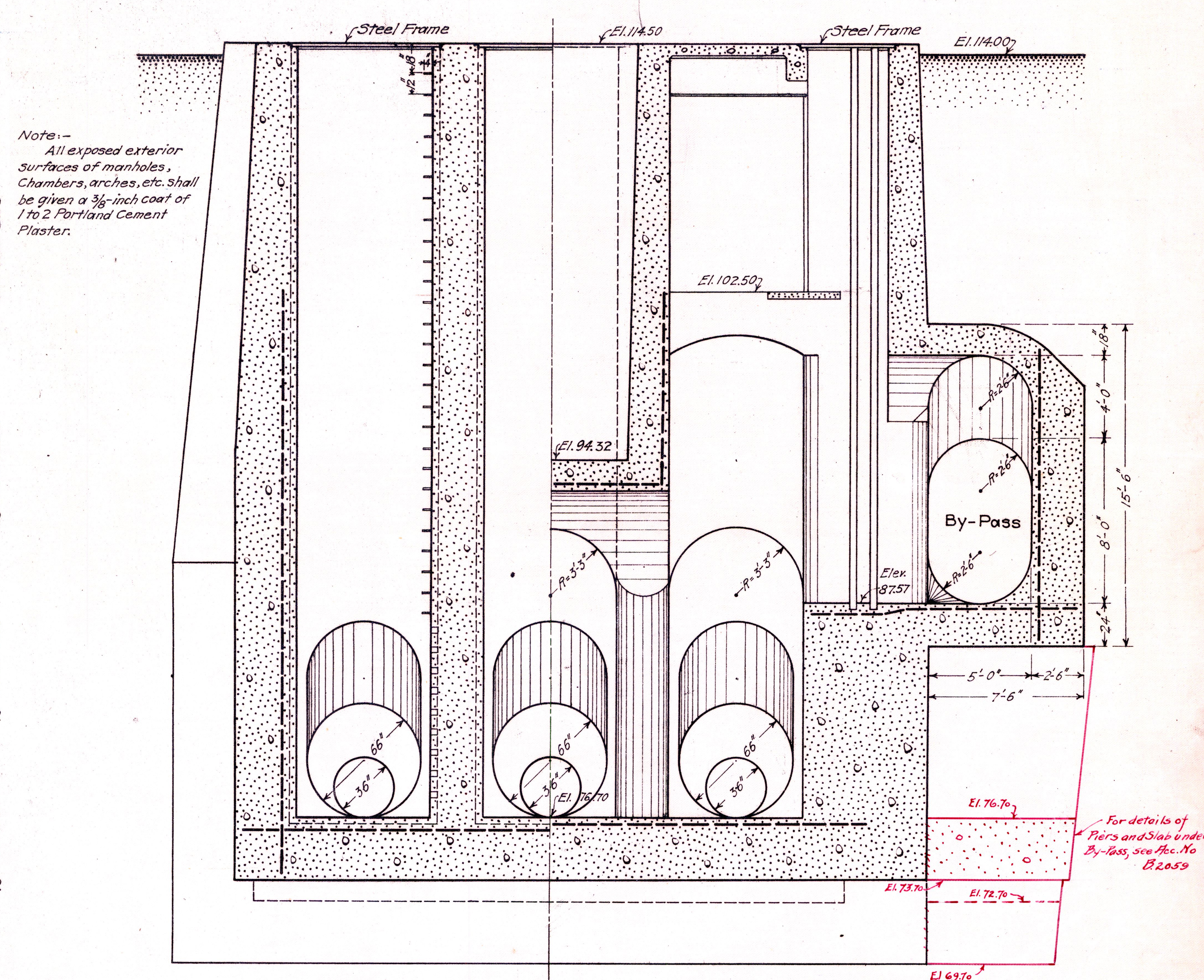
Wm. M. Brown
Chief Engineer
Wm. Gavin Taylor
Principal Assistant Engineer

Acc. No. B 1904

CONTRACT No. 46—SHEET 5.
SHEETS IN SET, 7.



Section on E-F



Section on G-H

Scale-$\frac{1}{4}$"=1 Ft.

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—PART OF SECTION 9

SECOND RIVER CROSSING & NEWARK METER

NEWARK & BELLEVILLE

VENTURI METER CHAMBER

CROSS SECTIONS

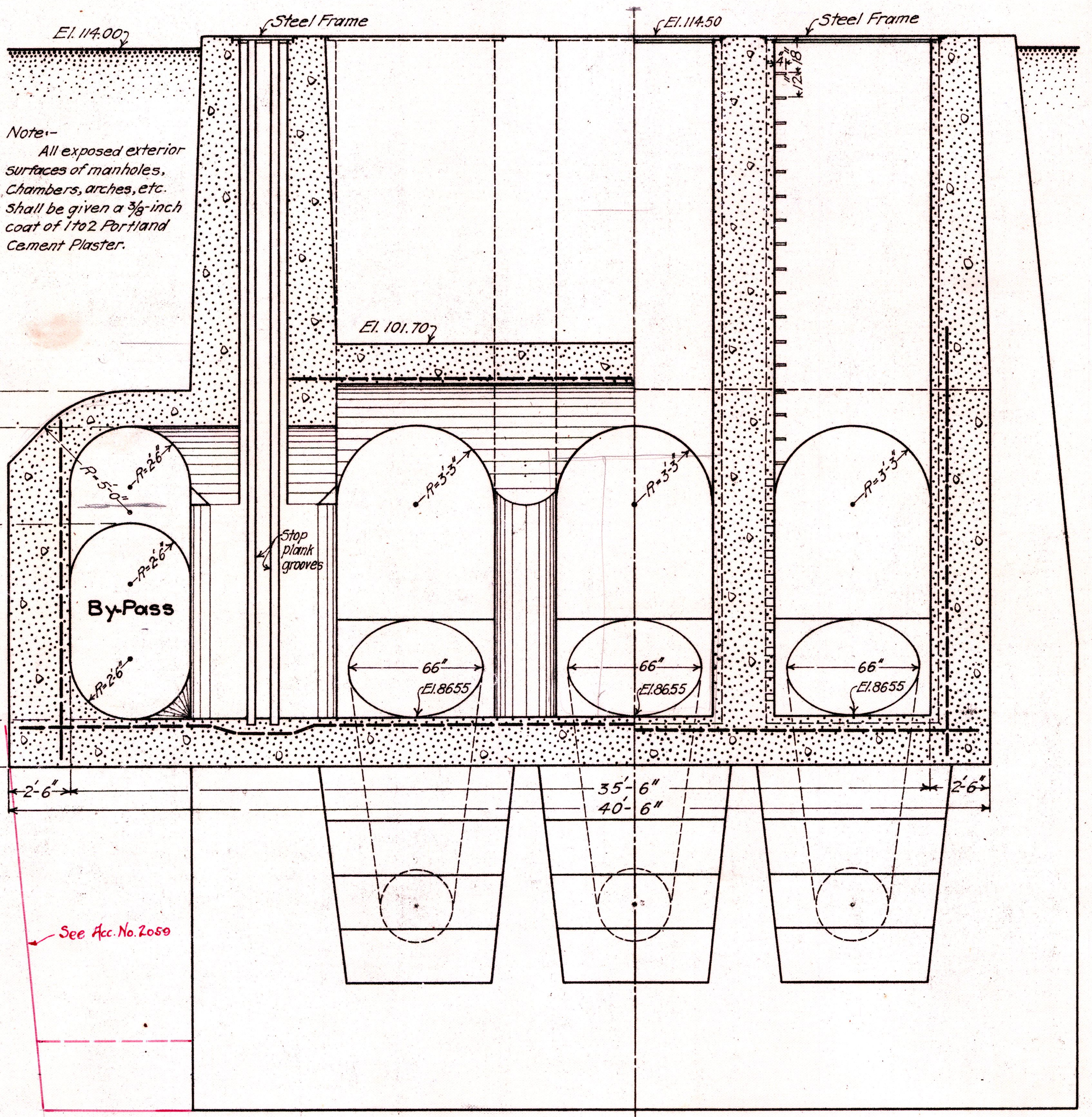
MAY 1, 1914

Wm. M. Brown
Chief Engineer

Wm. ...
Principal Assistant Engineer

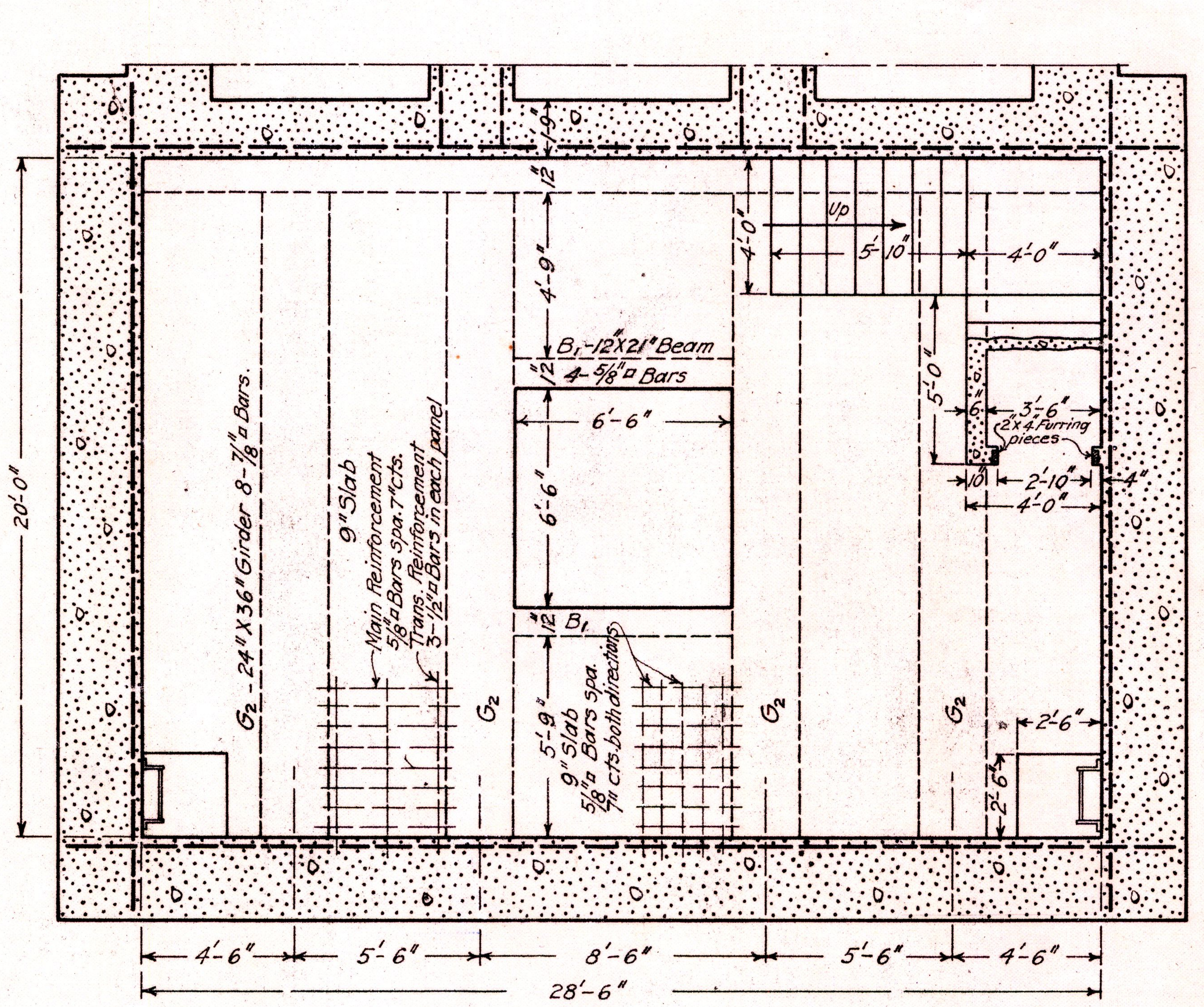
Acc. No. B 1905

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. Comp. BK
Myron G. Moran
Division Engineer. Assistant Engineer



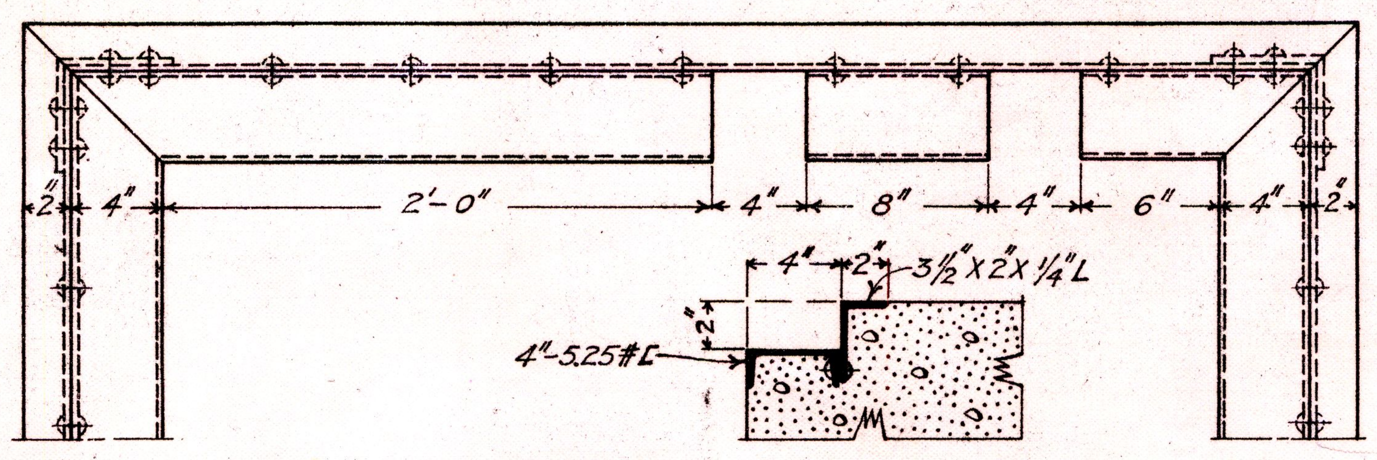
Section on I-J

Scale-1/4"=1 Ft.



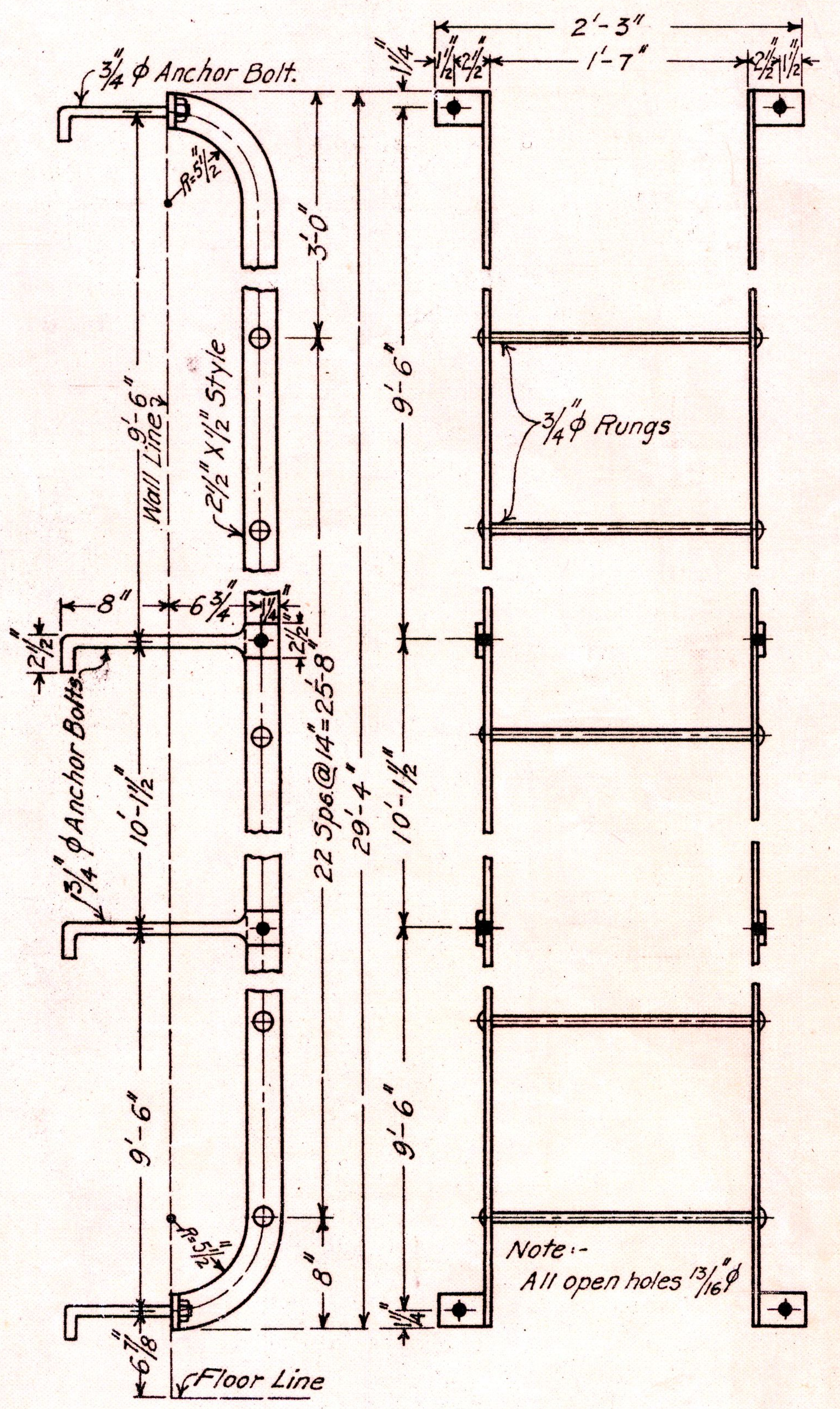
Venturi Meter Chamber
Plan of Floor at Elev. 99.50

Scale-1/4"=1 Ft.



Detail of Typical Steel Frame

Scale-1 1/2"=1 Ft.



Detail of Ladder

Scale-1"=1 Ft.

State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—PART OF SECTION 9

SECOND RIVER CROSSING & NEWARK METER

NEWARK & BELLEVILLE

VENTURI METER CHAMBER

CONSTRUCTION DETAILS

MAY 1, 1914

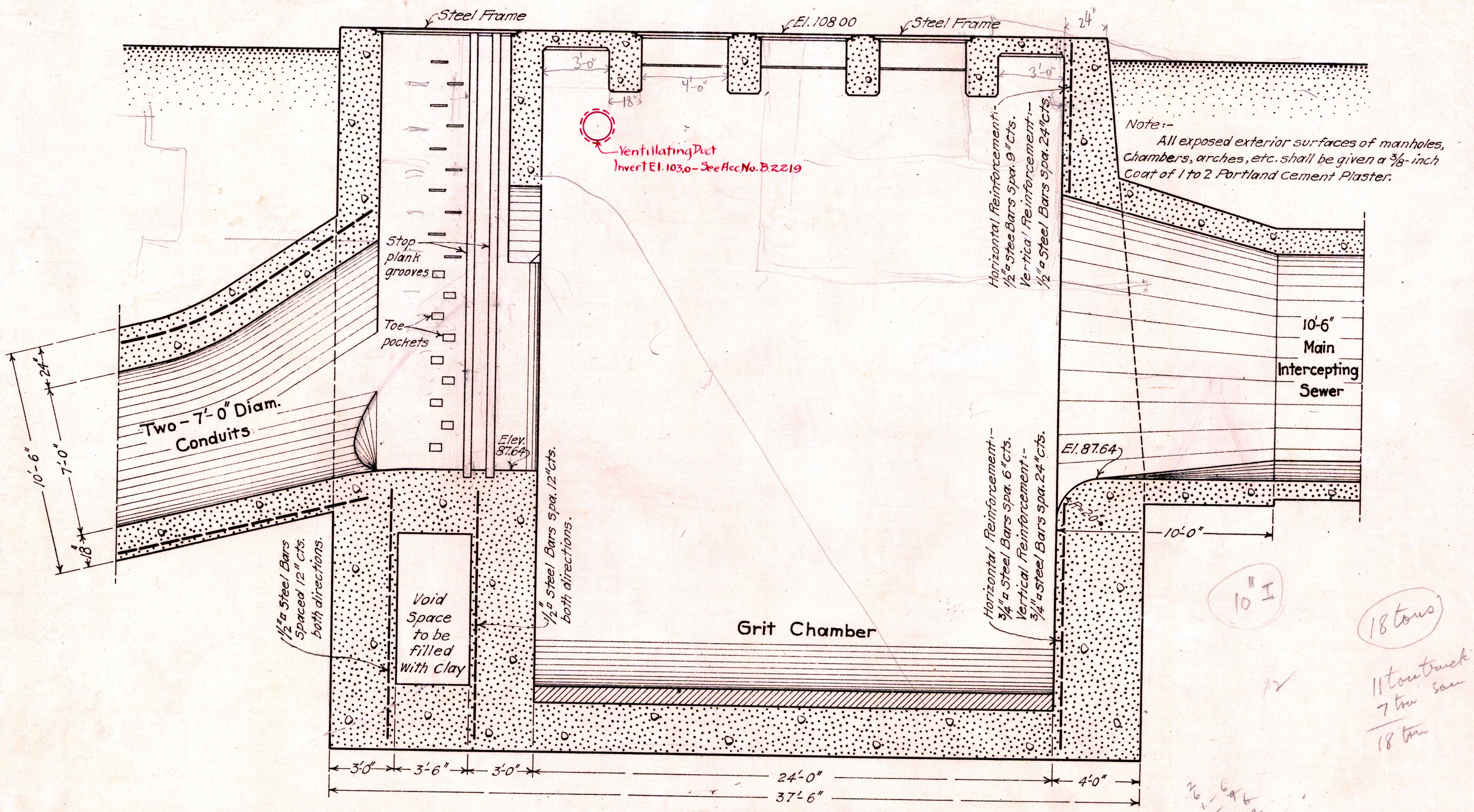
Acc. No. B 1906

Wm. M. Brown
Chief Engineer

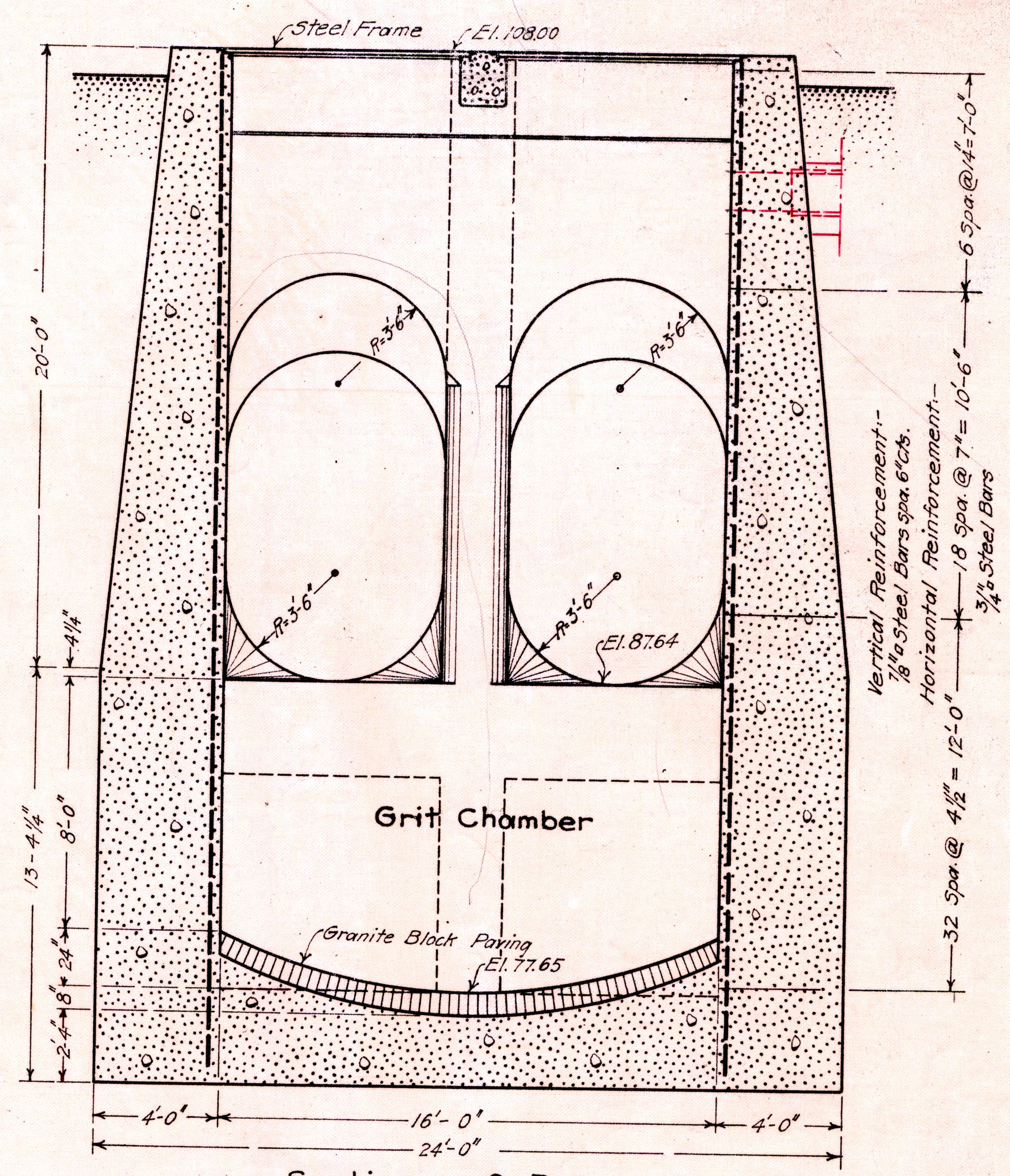
Wm. [illegible] Taylor
Principal Assistant Engineer

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. Comp. BK
[illegible]
Division Engineer. Assistant Engineer

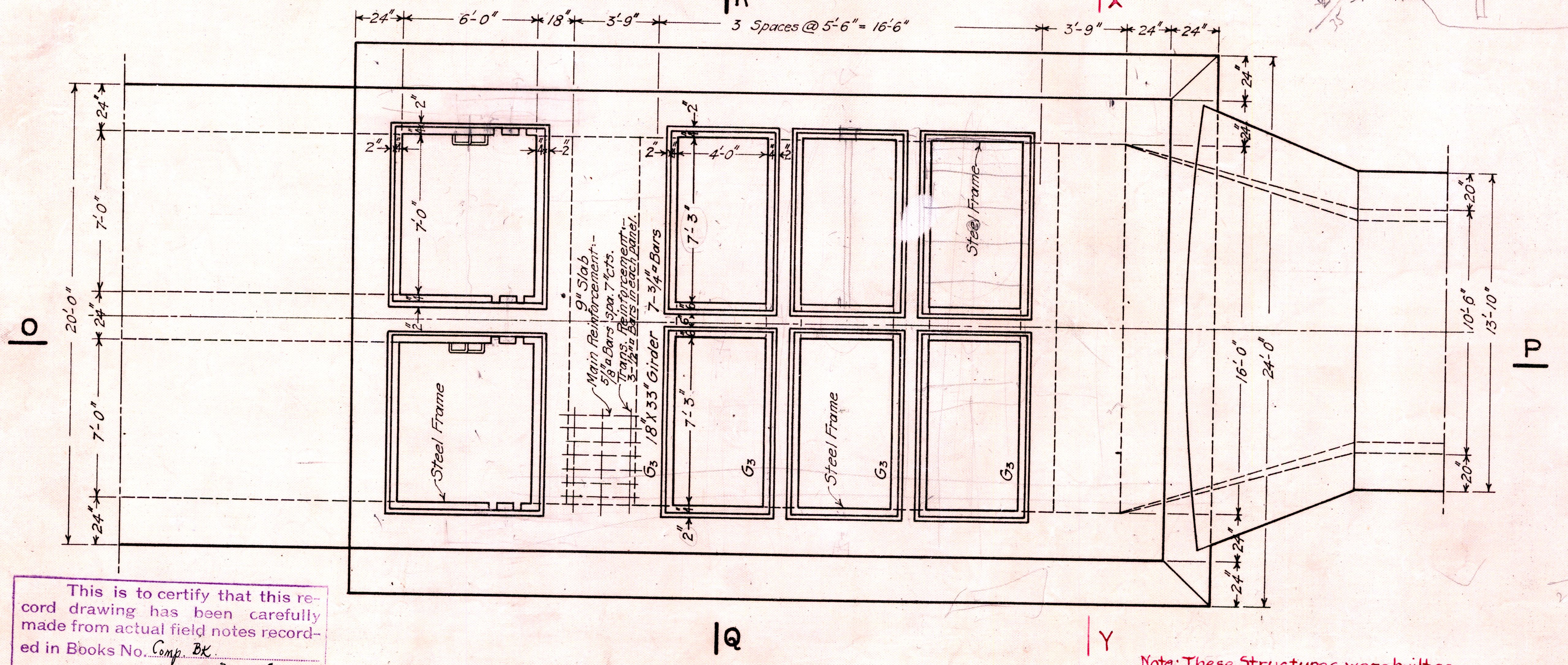
CONTRACT No. 46—SHEET 7.
SHEETS IN SET, 7.



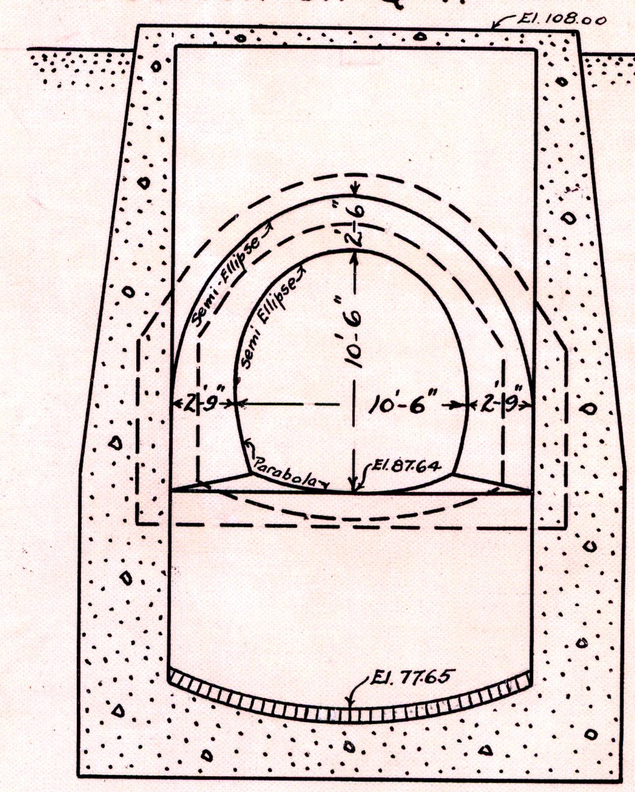
Section on O-P



Section on Q-R



Plan
Scale-1/4" = 1 Ft.



Section on X-Y
Elevation of Bell Mouth
See Acc. No. 2-A-49.
Scale 1 in. = 8 ft.

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. Comp. Bk.

Myron G. Mason
Division Engineer. Assistant Engineer.

Note: These structures were built as shown on this plan.

State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS—PART OF SECTION 9
SECOND RIVER CROSSING & NEWARK METER
NEWARK & BELLEVILLE
GRIT CHAMBER
CONSTRUCTION DETAILS

Wm. M. Brown
Chief Engineer

Wm. Gavin Taylor
Principal Assistant Engineer

MAY 1, 1914

Acc. No. B 1207

Contract No. 39

13

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 13

CITY OF PASSAIC

March 3, 1914

The Contract Drawings for Section 13 consist of this title sheet and 13 sheets of drawings bearing accession numbers—B1810 to B1823 inclusive.

Wm. M. Brown
Chief Engineer.

Wm. Lapier Taylor.
Principal Assistant Engineer.

Acc. No. B 1810

CONTRACT No. 39—SHEET 1.
SHEETS IN SET, 13.

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 13

CITY OF PASSAIC

PLAN AND PROFILE

STATION 0 TO STATION 10

MARCH 3, 1914

Wm. M. Brown
Chief Engineer

Wm. Lewis Taylor
Principal Assistant Engineer

Acc. No. B 1811

SCALES
Horizontal - 1 in. = 40 ft.
0 50 100 150 200
Vertical - 1 in. = 8 ft.
0 5 10 15 20 25 30 35 40

NOTE:—The borings and indications of pipes and other underground structures are supposed to be approximately correct, but should they be found to be otherwise the Contractor shall have no claim on that account, it being expressly understood that the Commissioners do not warrant the plot to be approximately correct.

The precise character of the foundation and the section at any given point cannot be determined in advance but will be decided upon by the Engineer as occasion demands.

The sewer line may be moved within the limits of the street and takings wherever thought best by the Engineer.

Note:- The Contractor is to furnish and use an approved water proofing compound in the concrete masonry in the walls, floor and roof of the Venturi Meter Chamber.

Note:- All exposed exterior surfaces of manholes, chambers, arches, etc. shall be given a 3/8-inch coat of 1 to 2 Portland Cement plaster.

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 13

CITY OF PASSAIC

PASSAIC: VENTURI METER

MARCH 3, 1914

Chief Engineer

Principal Assistant Engineer

Acc. No. B 1822

CONTRACT No. 39—SHEET 13.
SHEETS IN SET, 13.

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 13

CITY OF PASSAIC

PASSAIC: VENTURI METER

MARCH 3, 1914

Chief Engineer

Principal Assistant Engineer

Acc. No. B 1823

Contract No. 4

16

State of New Jersey

Passaic Valley Sewerage Commissioners

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 16

Clifton

Acquackanonk and Paterson

May 1, 1912

The Contract Drawings for Section 16 consist of this title sheet and 14 sheets of drawings bearing accession numbers—B1270 to B1284 inclusive.

Wm. M. Brown

Chief Engineer.

Wm. Gavin Taylor

Principal Assistant Engineer.

Acc. No. B. 1270

CITY OF PATERSON

CONTRACT No. 4—SHEET 6.

SHEETS IN SET, 14.

NOTE:—The borings and indications of pipes and other underground structures are supposed to be approximately correct, but should they be found to be otherwise the Contractor shall have no claim on that account, it being expressly understood that the Commissioners do not warrant the plot to be approximately correct.

The precise character of the foundation and the section at any given point cannot be determined in advance but will be decided upon by the Engineer as occasion demands.

The sewer line may be moved within the limits of the street and takings wherever thought best by the Engineer.

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. 12, 58, 65, Comp. BK.
Myron G. Marum
Division Engineer, Assistant Engineer

SCALES
Horizontal
Vertical

Chief Engineer

Principal Assistant Engineer

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 16

ACQUACKANONK AND PATERSON

PLAN AND PROFILE

STATION 50 TO STATION 60

MAY 1, 1912

Acc. No. B 1276

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. 12, 58, 65, Comp. Bk.
Myron G. Marans
Division Engineer / Assistant Engineer

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

CONTRACT DRAWINGS—SECTION 16

ACQUACKANONK AND PATERSON

PATERSON: VENTURI METER

MAY 1, 1912

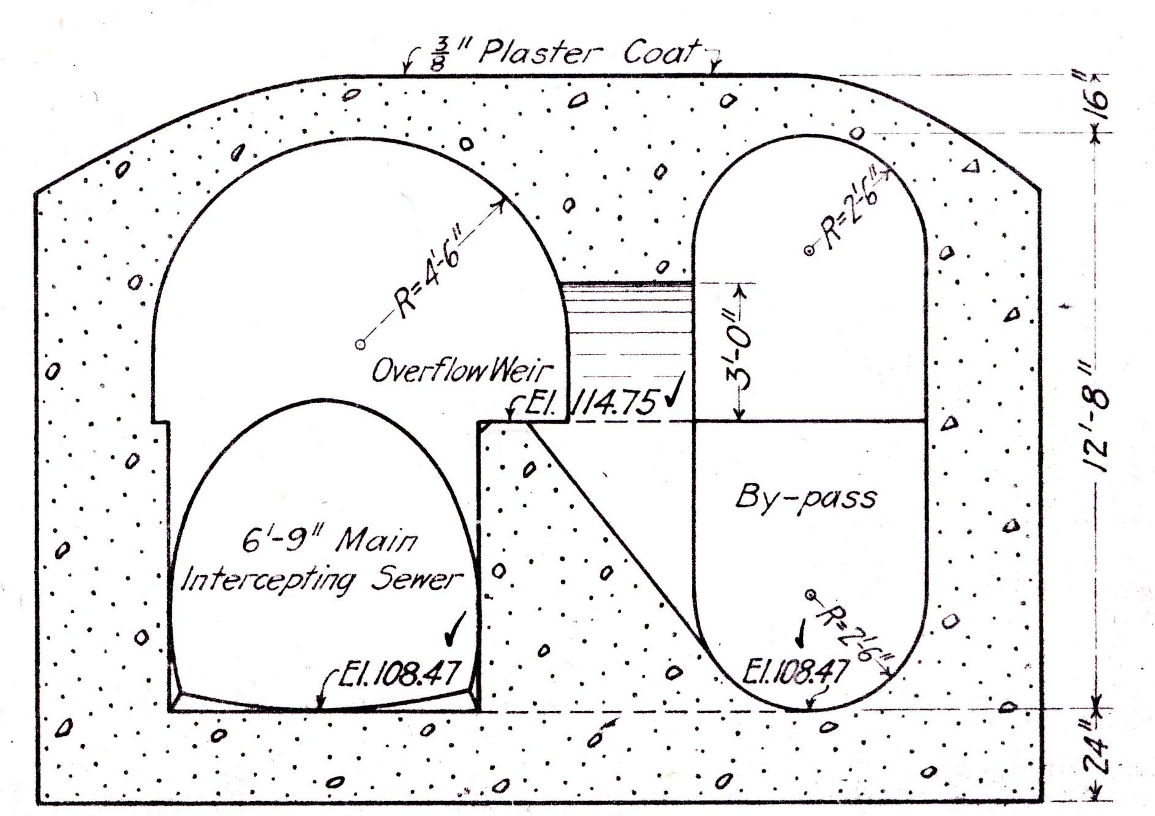
Chief Engineer

Principal Assistant Engineer

Acc. No. B 1282

CONTRACT No. 4—SHEET 13.
SHEETS IN SET, 14.

Section on A-B



Section on M-N

This is to certify that this record drawing has been carefully made from actual field notes recorded in Books No. 12, 58, 65, Comp. BK.
Myron S. Marcus
Division Engineer Assistant Engineer

SCALE
0 2' 4' 6' 8' 10' 12'
¼ inch = 1 foot

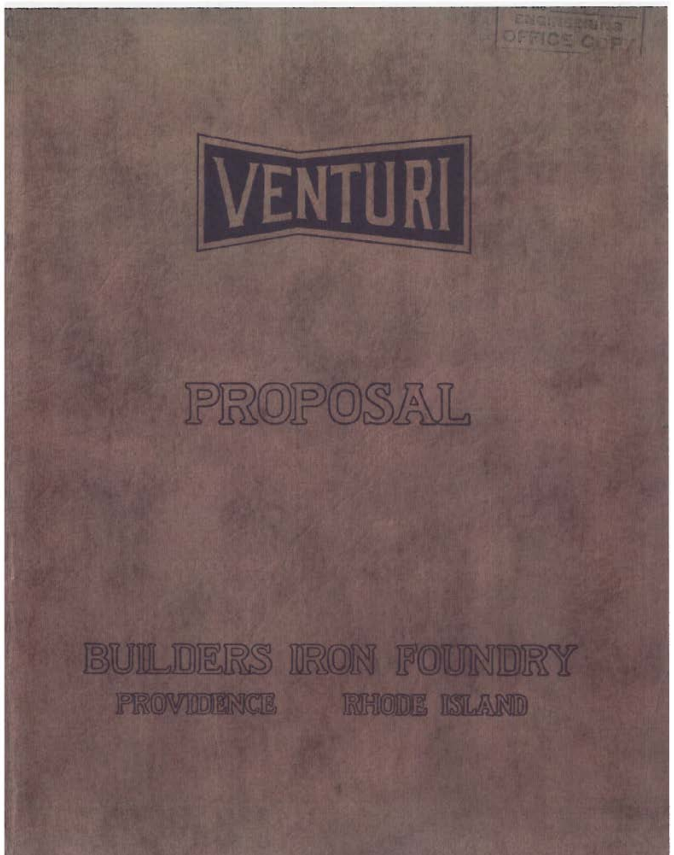
State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS—SECTION 16
ACQUACKANONK AND PATERSON
PATERSON: VENTURI METER
MAY 1, 1912

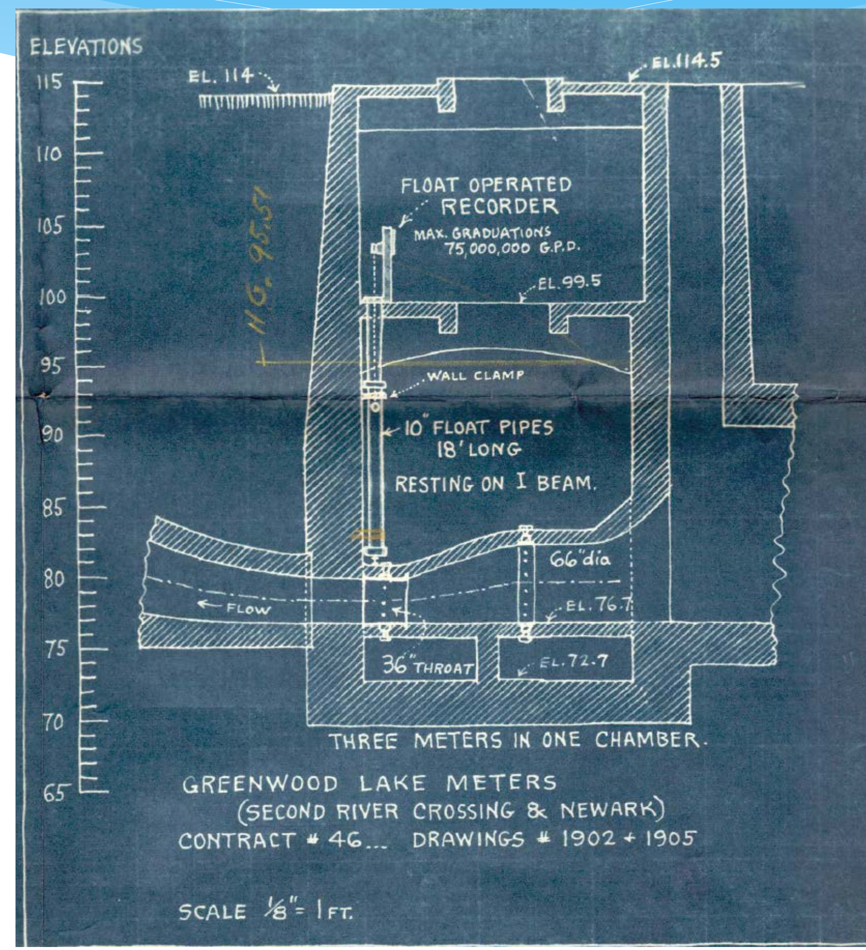
Chief Engineer
Principal Assistant Engineer

Acc. No. B 1283

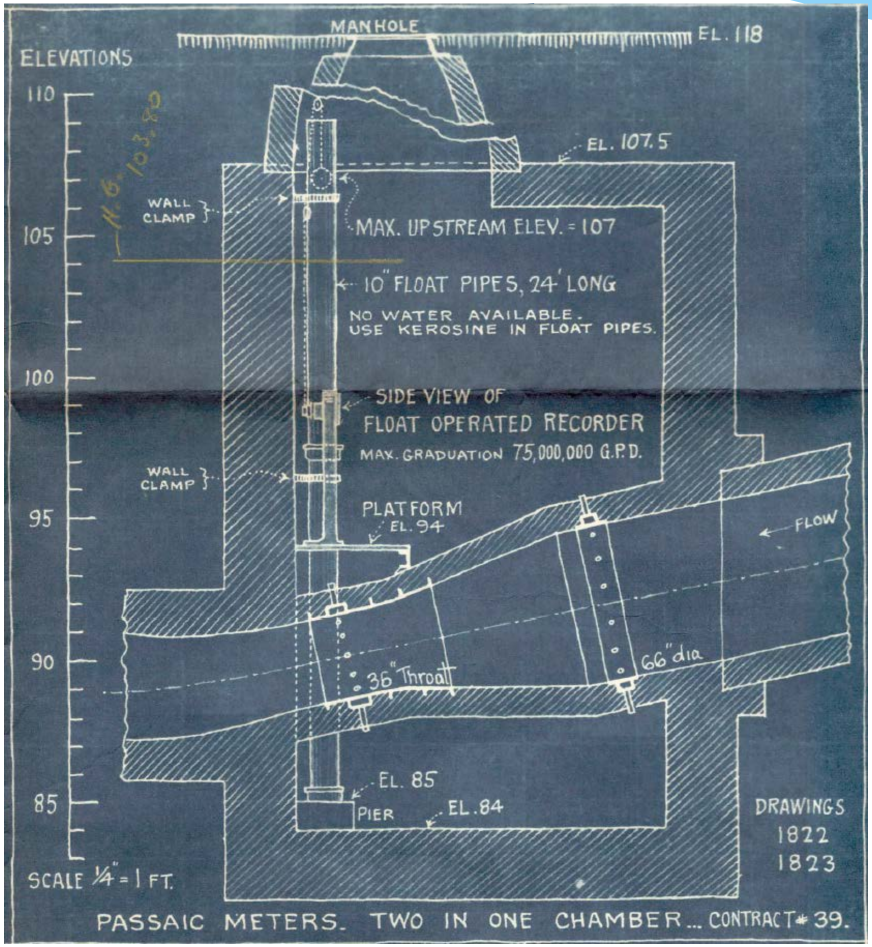
Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

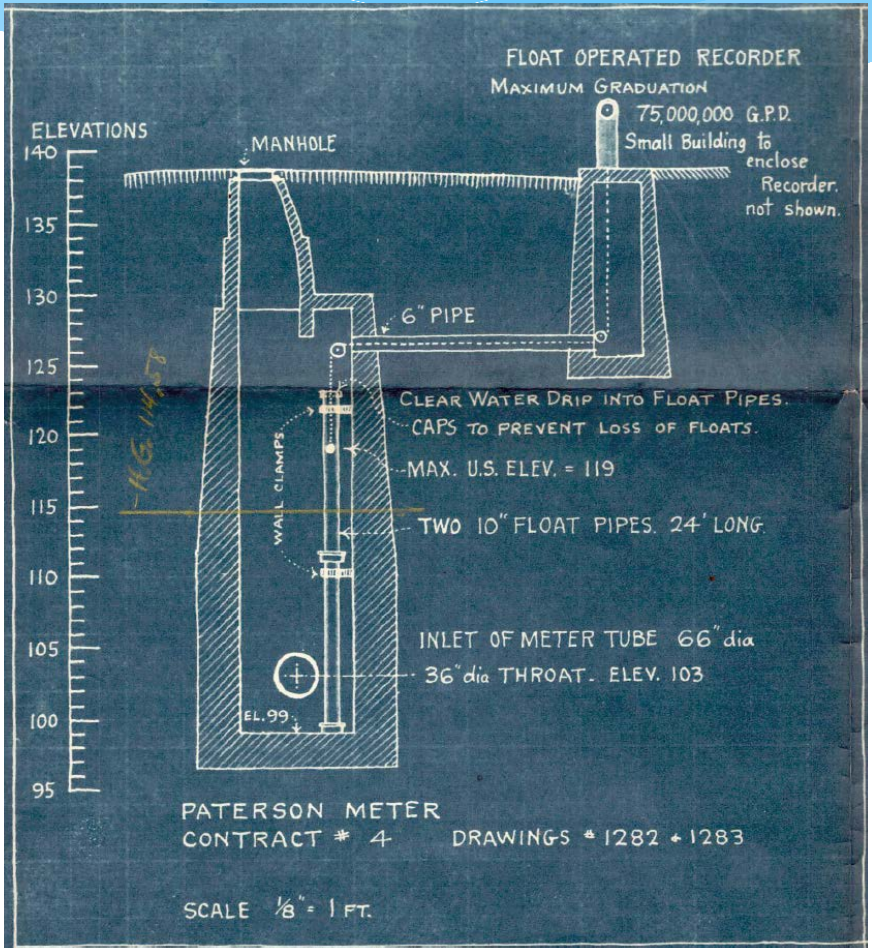
- Existing Venturi Flow Meter Manufacturer's Information



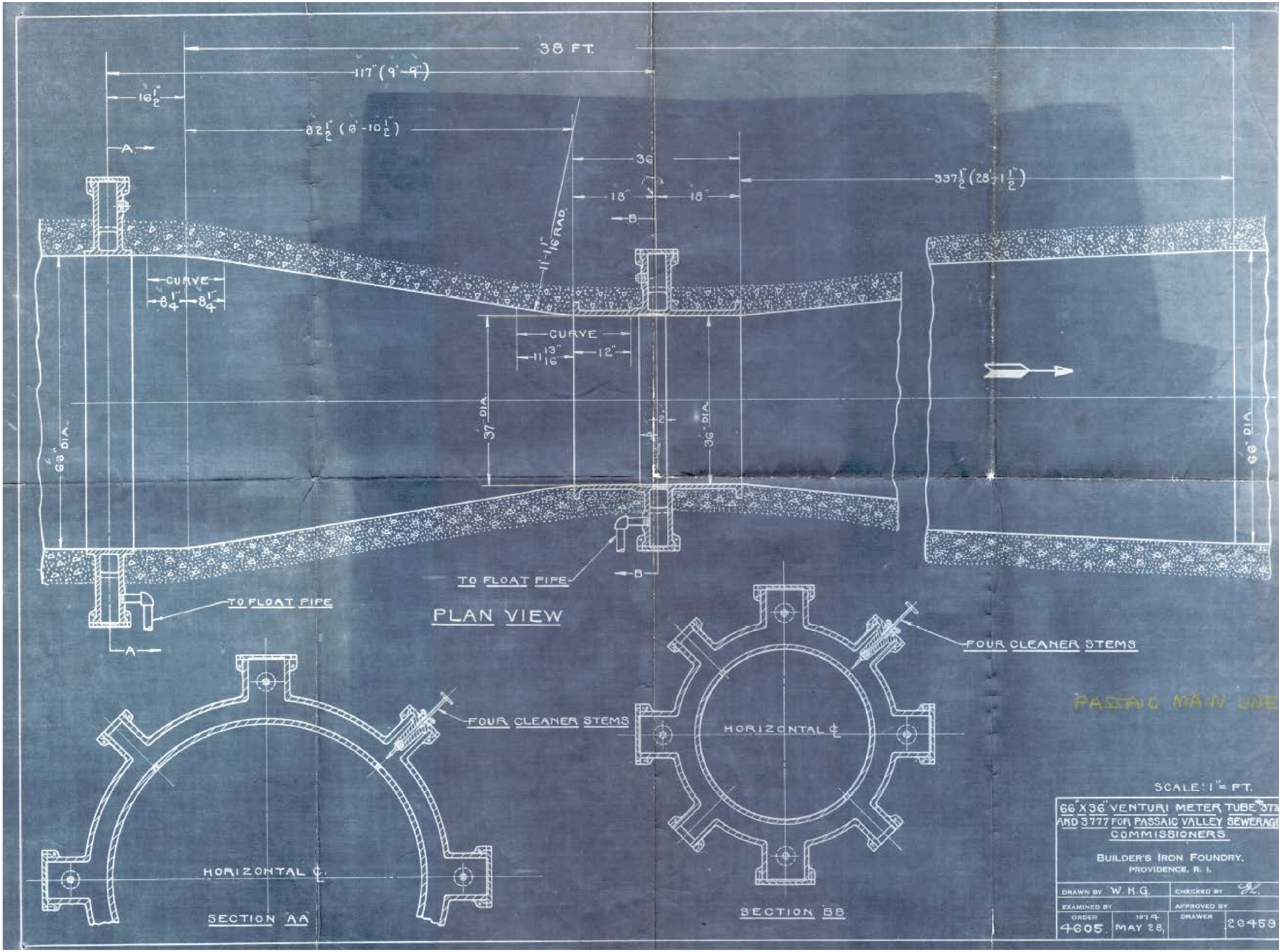


Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project





October 22, 2025


38 FT.
117" (9'-9")
16½"
82½" (6'-10½")
36
18"
18"
337½" (28'-1½")
11'-1 1/16 RAD.
CURVE
8¼" 8¼"
CURVE
11 13/16" 12"
37" DIA.
36" DIA.
66" DIA.
66" DIA.
A
B
TO FLOAT PIPE
TO FLOAT PIPE
PLAN VIEW
FOUR CLEANER STEMS
FOUR CLEANER STEMS
HORIZONTAL ℄
HORIZONTAL ℄
SECTION "AA"
SECTION "BB"
PASSAIC MAIN LINE
SCALE: 1" = FT.
66" X 36" VENTURI METER TUBE #3776 AND 3777 FOR PASSAIC VALLEY SEWERAGE COMMISSIONERS
BUILDER'S IRON FOUNDRY, PROVIDENCE, R. I.
DRAWN BY W. H. G.
CHECKED BY
EXAMINED BY
APPROVED BY
ORDER 4605
1914 MAY 28
DRAWER
26459

Venturi Flow Meters

* Meter Parameters

Passaic Valley Meter No.	B I F No.	Size	Type	Year Shipped	Pertinent Notes
MS-002	7462	40 x 20	H.S. * Component	1917	1
MS-010	16667	54 x 39.15	C.I. UVT	1970	2
MS-011 SECOND RIVER	3912-13-14	66 x 36	H.S. Component	1914	3
MS-026	34140	24 x 17.772	H.S. Short Form	1958	4
MS-031 YANTACAW	6252	18 x 9	VTHS	1917	5
MS-037 PASSAIC 1+2	3776-7	66 x 36	H.S. Component	1914	6
MS-038	6395	36 x 18	C.I. H.S.	1917	7
MS-039	15362	24 x 12	"	1930	8
MS-048	9029	36 x 18	VTHS	1921	9
MS-054	18122	20 x 10	H. S. Short Form	1938	10
MS-057	58908-1	16 x 13.03	Dall C.I	-	11
MS-058	40508-1	18 x 9.302	"	-	12
MS-062 PATERSON	2543	66 x 36	H.S. Component	1912	13
MS-063 ELMWOOD PARK #2	22464	10 x 6.125	H.S. Short Form C.I.	1946	14
MS-064	-	10 x 6	H.S. Component	?	15
MS-065	MAGNETIC TYPE METER				16

* H.S. means Herschel Standard Venturi proportions.

TRIP REPORT

SUBJECT: Passaic Valley Sewage Commission
Retrofit Program
Charles A. Manganaro, Cons. Engr.

THOSE PRESENT: 12/12/78
Bob Ready - Engr. - Passaic Valley
Ed Moller - Asst. Chief Engr. -Passaic Valley-
Gene Yetter - Charles A. Manganaro
Dave Millet - Sales Engr. - B I F
Jack Roscher- Service Engr. - B I F
E. B. Lynch - Product Mgr.- B I F

THOSE PRESENT: 12/13/78- Ready, Roscher and Lynch

The following report is a result of discussions held at the Passaic Valley Sewage Commission's office and visitations made to certain meter chambers to determine the feasibility of retrofitting the existing sewage meters with a more modern system of instrumentation. The list below gives the meter station, Venturi tube serial number, the Venturi tube type, the year shipped and notes pertaining to the installation.

3. These are three parallel tubes 66 x 36 H.S. proportions installed in 1914. The construction consists of an inlet and throat cast iron annular chamber grouted into cement Venturi sections. The cast iron annular chambers are equipped with cleanout covers - some with and some without manual vent cleaners. The retrofit will take special care due to the age of the fittings. It does not appear possible to use the existing horizontal taps for the SBF probe because of the arrangements of the pressure taps and lack of clearance between the wall and the horizontal location. Therefore, it is suggested that one of the cleanout ports above the horizontal be used by providing a new cover plate in stainless steel with the center tapped for a 3/4" corp cock. This metering vault will require special retrofit procedure and prequote measurements of the existing cleanout port covers.

6. There are two parallel tubes installed in this vault that were shipped in 1914. Construction is essentially the same as tubes No. 3912,13 and 14, so the remarks made in note #3 apply here also.

13. This is a rare breed indeed and probably one of its kind. It is the oldest of the tubes in this group, having been shipped in 1912. The construction consists of welded steel, high pressure section, cast iron adapter with bell and spigot ends joining the inlet section to a welded steel throat. The inlet and throat sections have exterior annular chambers consisting of an arrangement of a side-mounted chamber joined by 1-1/2" galvanized pipe. The chambers are equipped with manual vent cleaners. Special care must be exercised when attempting to retrofit. It presently appears possible to substitute a special probe in place of the manual vent cleaner. This will require special retrofitting procedures and prequote measurements of existing fittings.

Venturi Flow Meters

* Meter Parameters

VENTURI METER INFORMATION

NOTES	LOCATION	VENTURI SIZE	SERIAL NO.	MAX. FLOW	DIFF @ M.F.	EQUIPMENT
#3	MS-011 2nd River-1	66"x36"	3913	75 M.G.D.	47.3"	Chronoflow 231-20 CTUA-4
#3	MS-011 2nd River-2	66"x36"	3912 ? 3904	75 M.G.D.	47.3"	Chronoflow 231-20 CTUA-4
#3	MS-011 2nd River-3	66"x36"	3914	75 M.G.D.	47.3"	Chronoflow 231-20 CTUA-4
#6 (+)	MS-037 Passaic 1	66"x36"	3776	75 M.G.D.	46.8"	Chronoflow 232-0 OCT-2F
#6 (+)	MS-037 Passaic 2	66"x36"	3777	75 M.G.D.	46.8"	Chronoflow 232 OCT-2D
#13	MS-062 Paterson	66"x36"	2543	90 M.G.D.	68.125"	Chronoflow XMIT BIF-0-106 RCR BIF 0232-01

FLOW - DIFFERENTIAL READINGS

VENTURI METERS

PASSAIC, PATERSON AND SECOND RIVER

INCHES	FLOW	INCHES	FLOW	INCHES	FLOW	INCHES	FLOW	INCHES	FLOW
2	15.75	9	33.00	16	44.00	23	52.62	28½	58.60
2¼	16.69	9¼	33.50	16¼	44.37	23¼	52.87	29	59.25
2½	17.50	9½	34.00	16½	44.75	23½	53.12	29½	59.67
2¾	18.37	9¾	34.37	16¾	45.12	23¾	53.37	30	60.00
3	19.25	10	34.75	17	45.25	24	53.62	30½	60.58
3¼	20.00	10¼	35.12	17¼	45.59	24¼	53.93	31	61.~~00~~
3½	20.75	10½	35.50	17½	45.92	24½	54.25	31½	61.50
3¾	21.25	10¾	36.00	17¾	46.26	24¾	54.56	32	62.00
4	21.75	11	36.50	18	46.62	25	54.87	33	63.00
4¼	22.50	11¼	36.87	18¼	47.00	25½	55.50	34	64.00
4½	23.25	11½	37.25	18½	47.25	26	55.87	35	65.00
4¾	23.87	11¾	37.62	18¾	47.57	26½	56.50	36	65.68
5	24.50	12	38.00	19	47.87	27	57.00	37	66.66
5¼	25.13	12¼	38.37	19¼	48.12	27½	57.50	38	67.50
5½	25.75	12½	38.75	19½	48.50	28	58.00	39	68.50
5¾	26.37	12¾	39.12	19¾	48.75			40	69.25
6	27.00	13	39.50	20	49.00				
6¼	27.50	13¼	39.87	20¼	49.37				
6½	28.00	13½	40.25	20½	49.75				
6¾	28.50	13¾	40.62	20¾	50.10				
7	29.00	14	41.00	21	50.37				
7¼	29.50	14¼	41.37	21¼	50.70				
7½	30.00	14½	41.75	21½	51.00				
7¾	30.62	14¾	42.12	21¾	51.37				
8	31.25	15	42.50	22	51.75				
8¼	31.75	15¼	42.87	22¼	51.93				
8½	32.25	15½	43.25	22½	52.12				
8¾	32.62	15¾	43.62	22¾	52.37				

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Design Drawings

* Design Engineer:
  * CDM SMITH

October 22, 2025

PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS REHABILITATION PROJECT

PASSAIC VALLEY SEWERAGE COMMISSION

600 WILSON AVENUE
NEWARK, NEW JERSEY 07105
(973) 344-1800
www.nj.gov/pvsc

CHAIRMAN

THOMAS TUCCI, JR.

VICE CHAIRMAN

LUIS A. QUINTANA

COMMISSIONERS

ELIZABETH CALABRESE
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EXECUTIVE DIRECTOR

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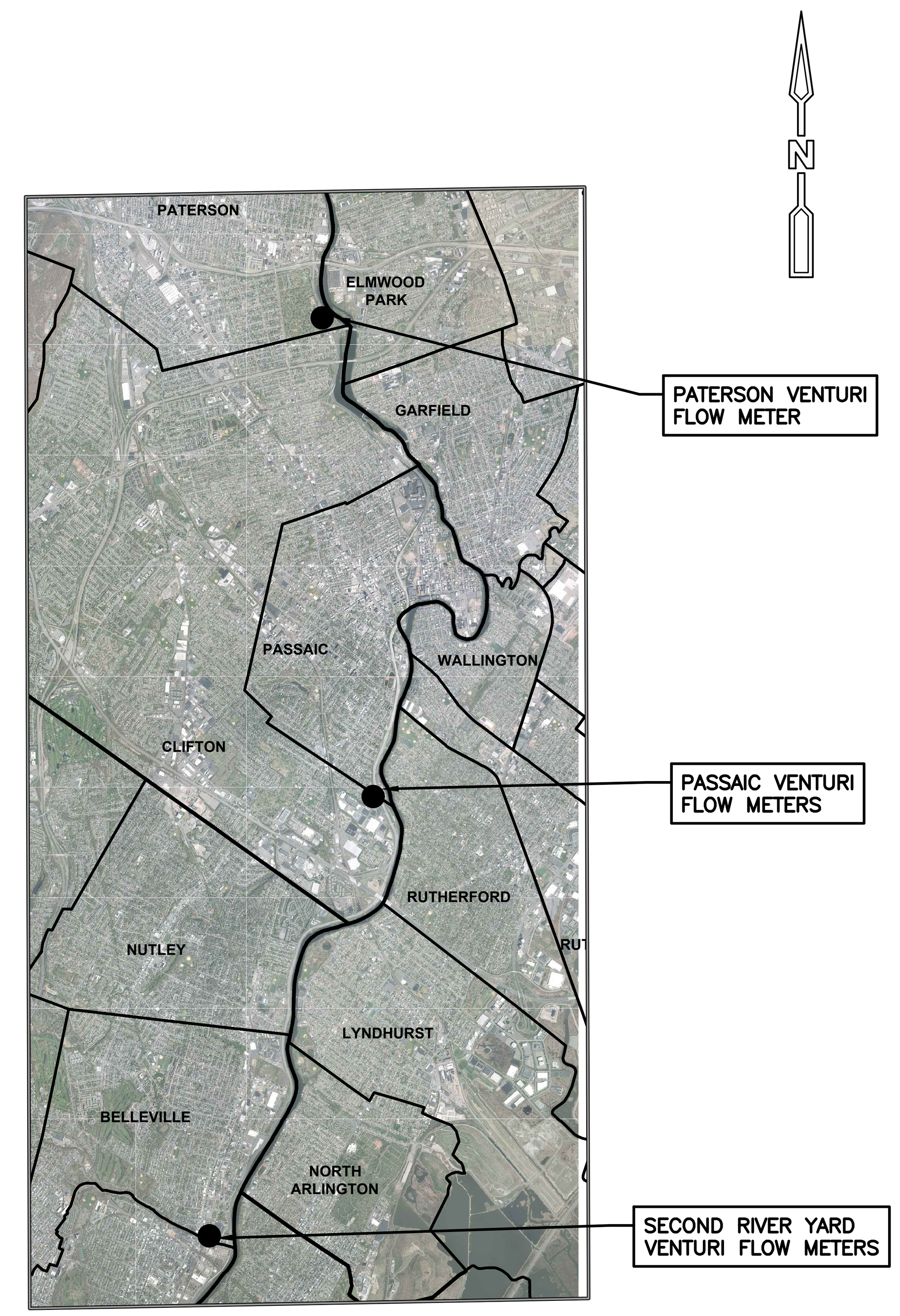
CLERK

ALBERT LUKIN



LOCATION PLAN
1" = 10,000'
5,000 0 10,000

LIST OF DRAWINGS

GENERAL

G-1 GENERAL NOTES, LEGEND, AND ABBREVIATIONS

CIVIL

C-1 SECOND RIVER YARD VENTURI FLOW METERS – SITE PLAN AND PROFILE
C-2 SECOND RIVER YARD VENTURI FLOW METERS – TOP LEVEL PLAN AND SECTIONS
C-3 SECOND RIVER YARD VENTURI FLOW METERS – LOWER LEVEL PLAN AND SECTION
C-4 PASSAIC VENTURI FLOW METERS – SITE PLAN AND PROFILE
C-5 PASSAIC VENTURI FLOW METERS – LOWER LEVEL PLAN AND SECTIONS
C-6 PASSAIC VENTURI FLOW METERS – TOP LEVEL PLAN AND SECTION
C-7 PATERSON VENTURI FLOW METER – SITE PLAN AND PROFILE
C-8 PATERSON VENTURI FLOW METER – LOWER LEVEL PLANS AND SECTIONS
C-9 PATERSON VENTURI FLOW METER – TOP LEVEL PLAN AND SECTIONS

TRAFFIC

T-1 TEMPORARY TRAFFIC CONTROL – GENERAL NOTES & LEGEND
T-2 ROUTE 20 SOUTHBOUND ROAD "B" (NJDOT), PATERSON TEMPORARY TRAFFIC CONTROL DETOUR PLAN
T-3 ROUTE 20 SOUTHBOUND ROAD "B" (NJDOT), PATERSON TEMPORARY TRAFFIC CONTROL DETOUR SIGNAGE LEGEND

STRUCTURAL

SD-1 TYPICAL CONCRETE REPAIR DETAILS

CONFORMED
APRIL 2024

CDM Smith

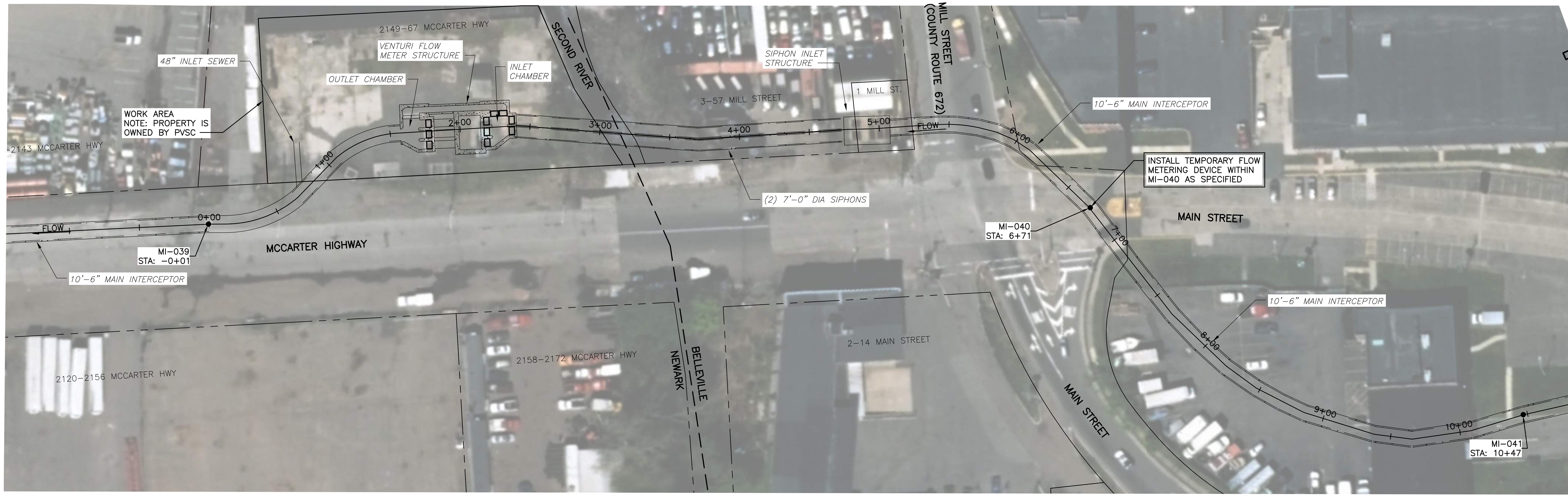
STATE OF NEW JERSEY
Matthew S Young
No. 24GE05715000
LICENSED
PROFESSIONAL ENGINEER

Digitally signed by Matthew S Young
Date: 2023.05.12 11:49:39 -04'00'

EDISON, NEW JERSEY

Water ***Environment*** ***Transportation*** ***Energy*** ***Facilities***

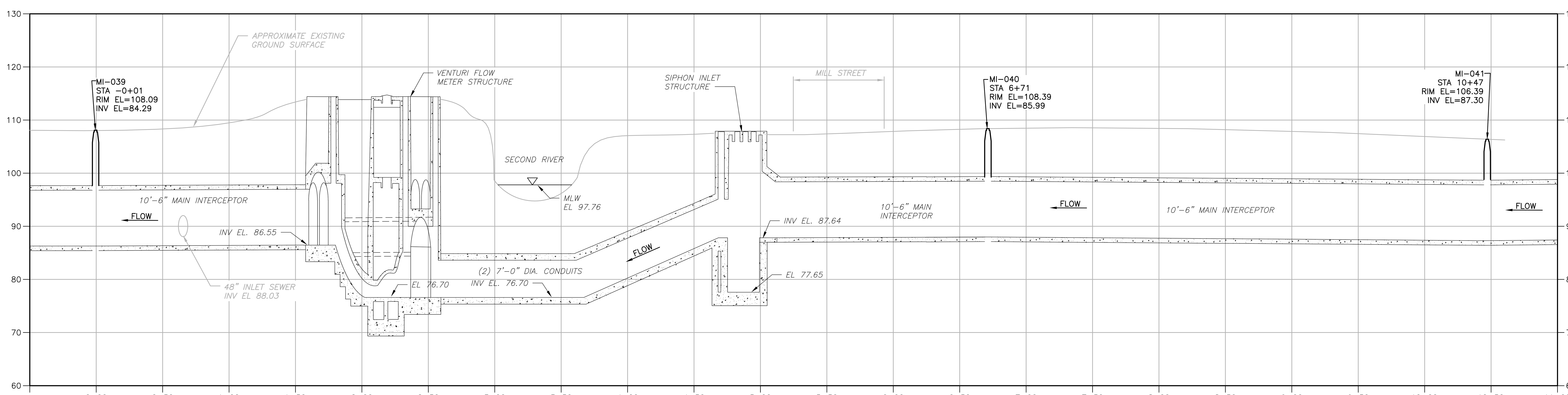
5063-115247



SECOND RIVER YARD VENTURI FLOW METERS
SITE PLAN
1" = 40'

NOTS:

1. THE THREE (3) VENTURI FLOW METERS IN THE SECOND RIVER YARD VENTURI FLOW METER CHAMBER SHOWN ARE TO BE BYPASSED AND INSPECTED. SHOULD ANY DEFECTS BE DISCOVERED DURING INSPECTION, THE VENTURI FLOW METERS ARE TO BE REHABILITATED. SEE SHEETS C-2 AND C-3 FOR PLANS AND SECTIONS OF THE VENTURI FLOW METER CHAMBER.
2. ALL EQUIPMENT, VEHICLES, AND MATERIALS FOR WORK AT SECOND RIVER YARD VENTURI FLOW METER SHALL BE CONFINED TO DESIGNATED PVSC-OWNED PROJECT WORK AREA AND SHALL NOT IMPEDE TRAFFIC ON MCCARTER HIGHWAY.



PROFILE
HOR: 1"=40'; VER:1"=4'

1" = 4'
1" = 40'

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

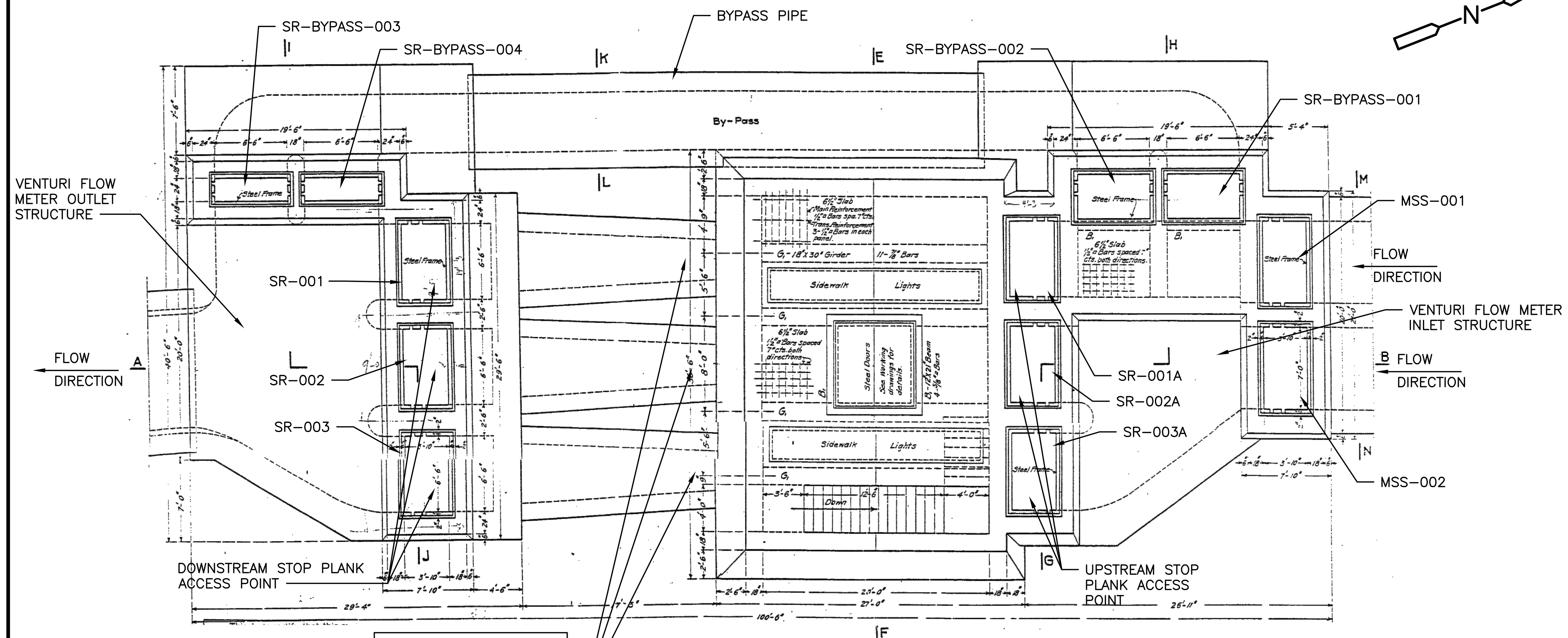
CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

Digitally signed by Matthew S Young
Date: 2023.05.12 14:00:27 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION
CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS REHABILITATION PROJECT

SECOND RIVER YARD VENTURI FLOW METERS
SITE PLAN AND PROFILE

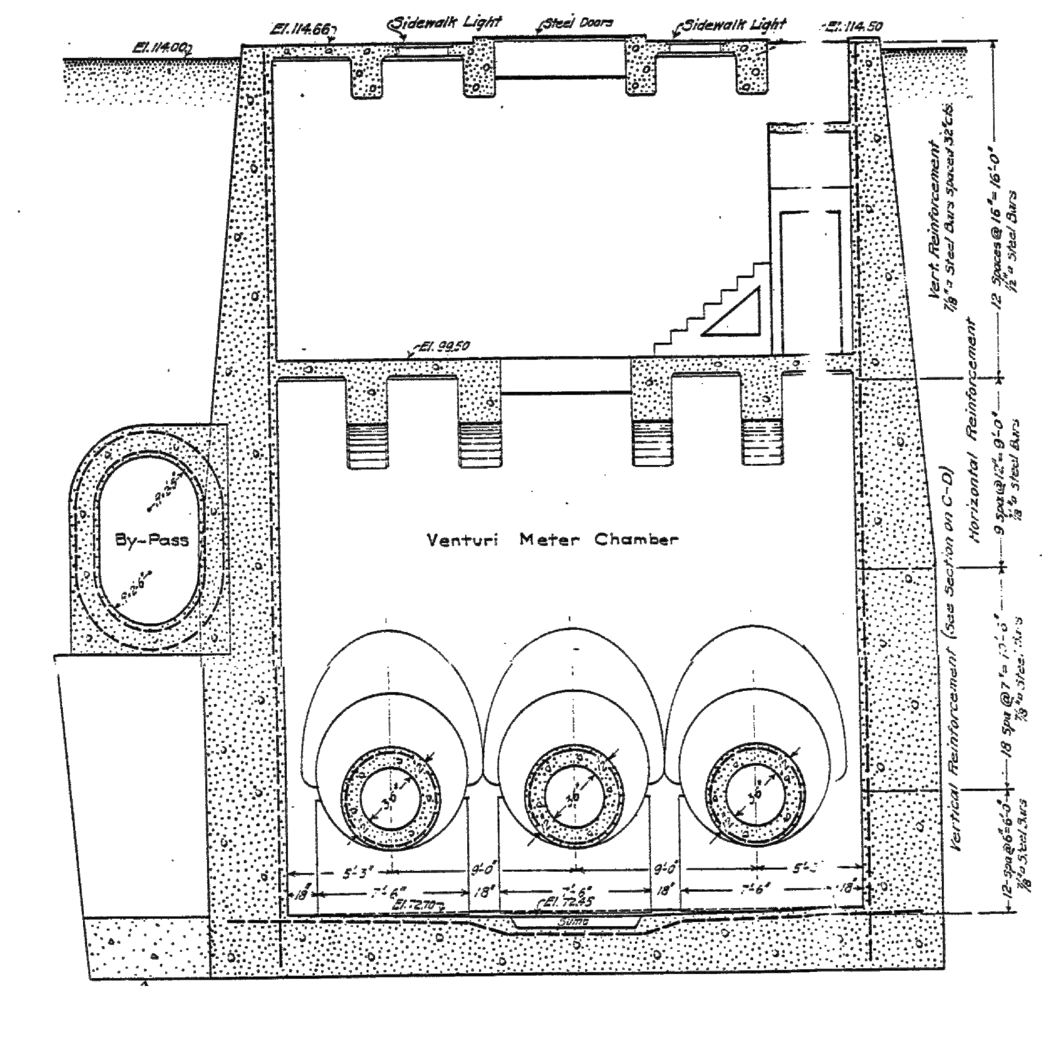
PROJECT NO. 5063-115247
FILE NAME: C001PLPR
SHEET NO. C-1



SECOND RIVER YARD VENTURI FLOW METERS TOP LEVEL

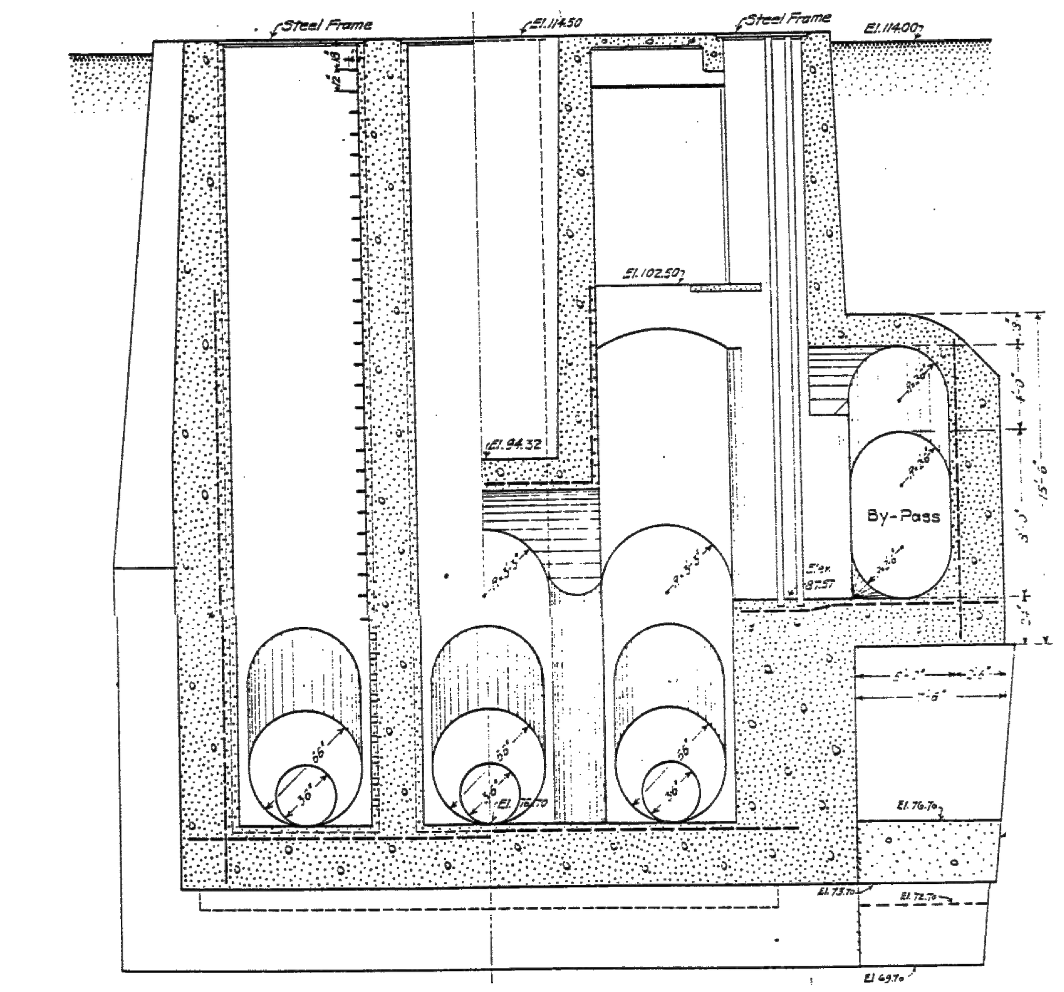
PLAN

1/8" = 1'-0"



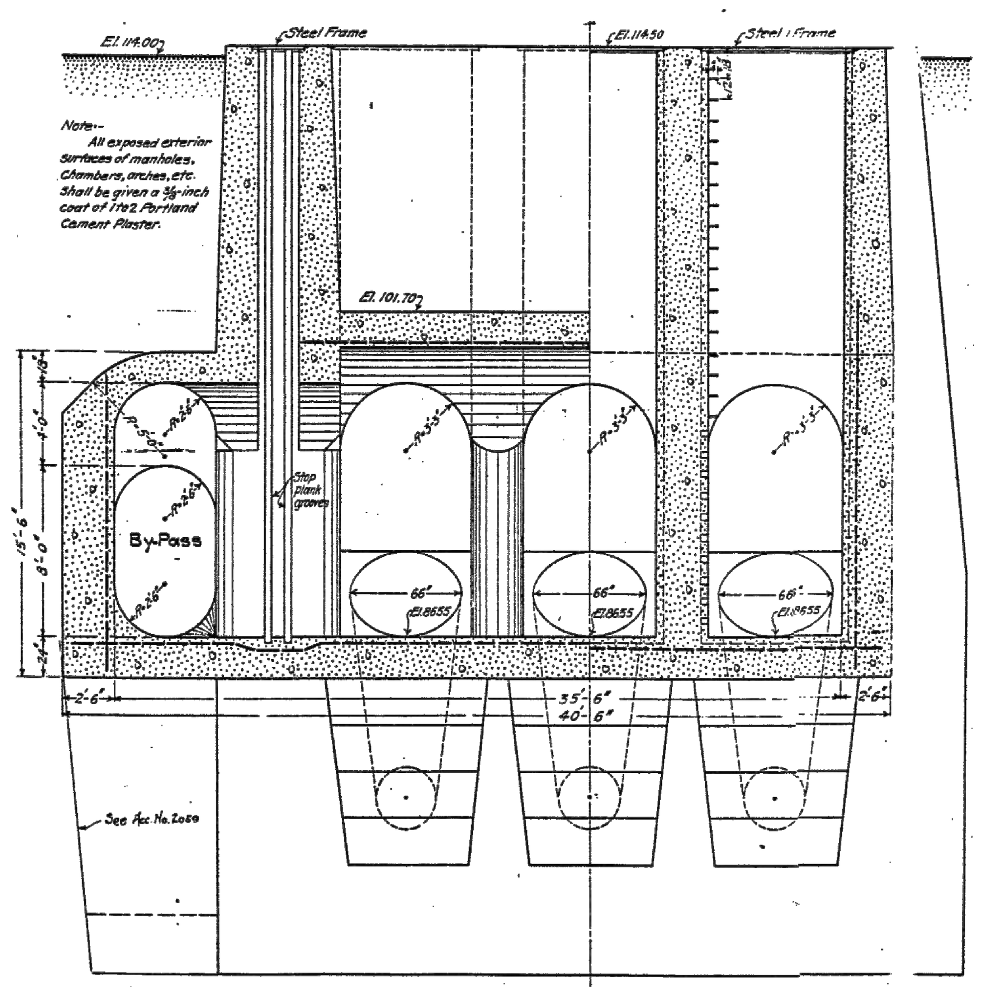
SECTION E-F

1/8" = 1'-0"



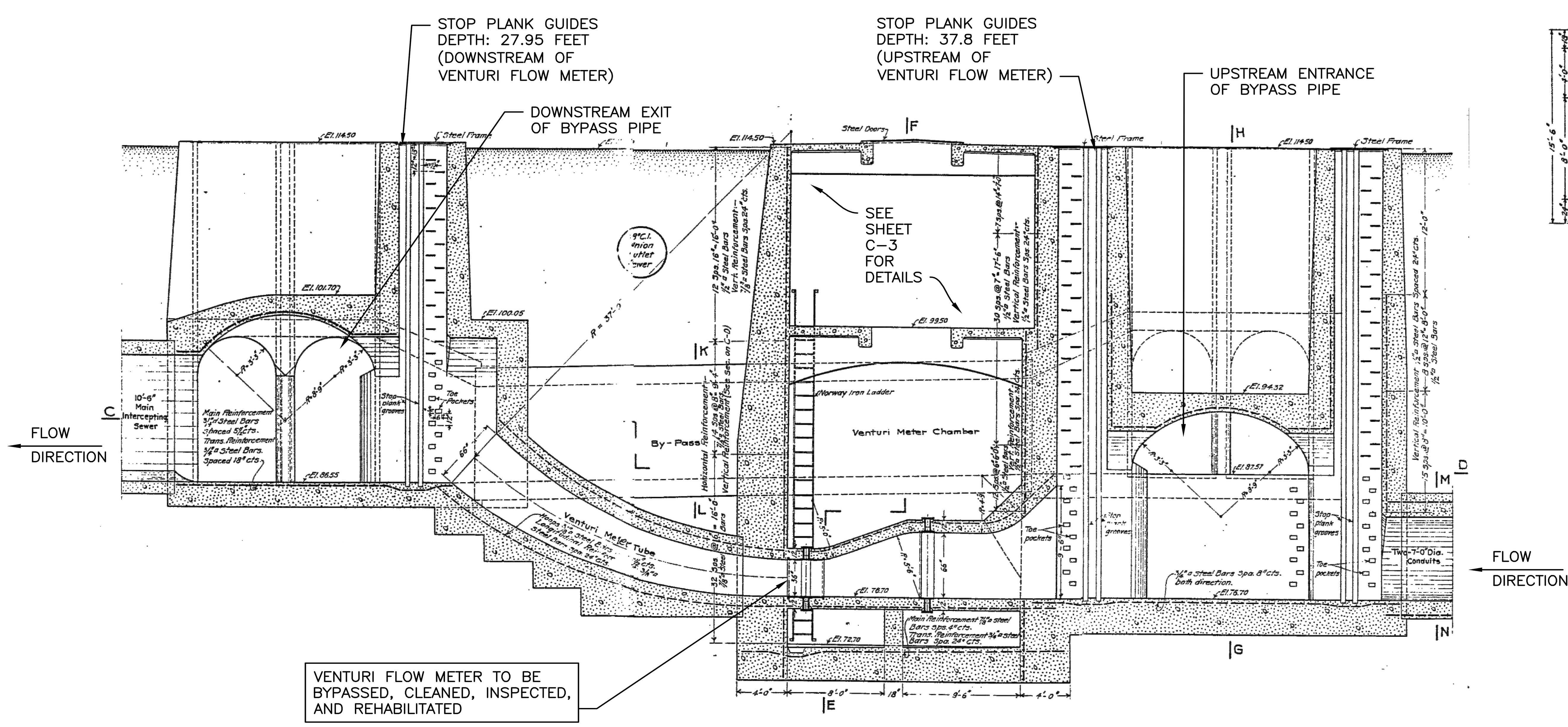
SECTION G-H

1/8" = 1'-0"



SECTION I-J

1/8" = 1'-0"



SECTION A-B

1/8" = 1'-0"

PROPOSED SEQUENCE OF WORK:

THE CONTRACTOR SHALL PERFORM THE FOLLOWING SCOPE OF WORK IN THE FOLLOWING SUGGESTED SEQUENCE OF OPERATIONS: (ALTERNATE PROCEDURES MUST BE SUBMITTED AND APPROVED BY ENGINEER.)

1. THE CONTRACTOR WILL NEED TO REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE DOWNSTREAM SIDE OR EXIT OF THE BYPASS PIPE.
2. CLEAN AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. ASSUME HEAVY CLEANING AND DEBRIS REMOVAL. NOTIFY ENGINEER 48-HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITHIN 24-HOURS.
3. PERFORM REHABILITATION OF BYPASS PIPE AS DIRECTED BY ENGINEER.
4. PERFORM 3D LASER SCAN INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
5. PRIOR TO REMOVING UPSTREAM STOP LOGS ON THE BYPASS PIPE AND THE ISOLATION OF THE VENTURI FLOW METER, THE CONTRACTOR WILL FURNISH AND INSTALL THE SPECIFIED TEMPORARY FLOW METER WITHIN MH MI-040. REFER TO SPECIFICATION SECTION 331210.
6. REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE UPSTREAM SIDE OR ENTRANCE OF THE BYPASS PIPE.
7. ISOLATE ONE (1) VENTURI FLOW METER AT BOTH THE UPSTREAM AND DOWNSTREAM END UTILIZING STOP PLANKS AND EXISTING STOP PLANK GROOVES AND/OR A TEMPORARY FLOW DIVERSION SYSTEM DESIGNED AND INSTALLED BY THE CONTRACTOR. REFER TO SPECIFICATION SECTION 331210. THE UPSTREAM ENTRANCE OF THE VENTURI FLOW METER SHALL BE ISOLATED PRIOR TO DOWNSTREAM EXIT.
8. AFTER VENTURI FLOW METER HAS BEEN ISOLATED, INSPECT CONDITION OF STOP GROOVES AT UPSTREAM ENTRANCE AND DOWNSTREAM EXIT.
9. PERFORM REHABILITATION OF STOP GROOVES AS DIRECTED BY ENGINEER.
10. IF NECESSARY, REMOVE THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES THAT MAY INTERFERE WITH THE CLEANING, INSPECTION, AND REHABILITATION OF THE VENTURI FLOW METER.
11. DEWATER, CLEAN, AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER. NOTIFY ENGINEER 48-HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITH 24-HOURS.
12. CONTRACTOR TO PERFORM REHABILITATION OF METER AS DIRECTED BY ENGINEER.
13. PERFORM 3D LASER SCAN INSPECTION OF THE VENTURI FLOW METER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
14. IF NECESSARY, REINSTALL THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES.
15. REINSTATE FLOW IN THE VENTURI FLOW METER BY REMOVAL OF STOP PLANKS AND/OR TEMPORARY FLOW DIVERSION SYSTEM. REMOVE FLOW DIVERSION SYSTEM FROM DOWNSTREAM EXIT OF VENTURI FLOW METER PRIOR TO REMOVAL FROM UPSTREAM ENTRANCE.
16. REPEAT STEPS 7-15 FOR EACH VENTURI FLOW METER.
17. UPON COMPLETION OF STEPS 7-16 FOR THIS SITE LOCATION, REMOVE TEMPORARY FLOW METER FROM MI-040.
18. FURNISH AND INSTALL NEW STOP PLANKS WITHIN THE UPSTREAM ENTRANCE AND DOWNSTREAM EXIT OF THE VENTURI FLOW METER BYPASS PIPE.

NOTES:

1. STOP PLANKS ARE CURRENTLY INSTALLED AT INLET AND OUTLET OF THE VENTURI FLOW METER BYPASS PIPE. NEW STOP PLANKS ARE TO BE INSTALLED TO THE SAME ELEVATION IN ACCORDANCE WITH ITEM 17. OF THE PROPOSED SEQUENCE OF WORK.
2. RECORD DRAWINGS INDICATE THAT STOP PLANK GROOVES ARE FOUR (4) INCHES WIDE AND FOUR (4) INCHES DEEP.
3. CURRENT DIMENSIONS AND CONDITION OF STOP PLANK GROOVES WILL BE FIELD VERIFIED BY CONTRACTOR.
4. INSPECTION DATA FOR EACH ACCESS POINT IS PROVIDED IN APPENDIX TO PROJECT SPECIFICATIONS. LOCKED ACCESS POINTS SHALL BE COORDINATED WITH OWNER.
5. APPROXIMATELY 10 CY OF MATERIAL IS ANTICIPATED TO BE REMOVED FROM THE UPSTREAM CHAMBER AND BYPASS PIPE OF THE SECOND RIVER YARD VENTURI FLOW METER.
6. ENGINEER MAY REQUEST MODIFICATIONS TO VENTURI FLOW METER, FOR DETAIL SEE APPENDIX G OF SPECIFICATIONS.

1/8" = 1'- 0"

4 2 0 4 8

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/23	TPC	SHS	Addenda No.2

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY, Matthew S. Young, No. 24GE05715000, LICENSED PROFESSIONAL ENGINEER

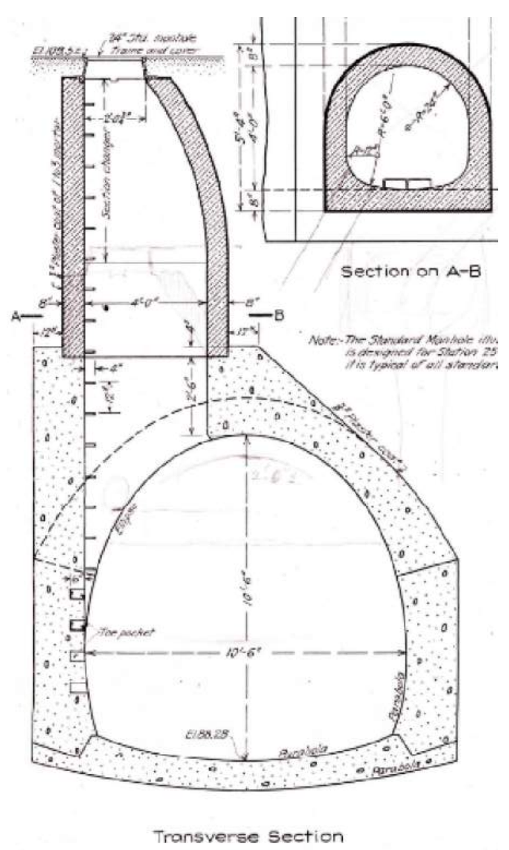
Digitally signed by Matthew S Young
Date: 2023.08.04 11:05:29 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS
REHABILITATION PROJECT

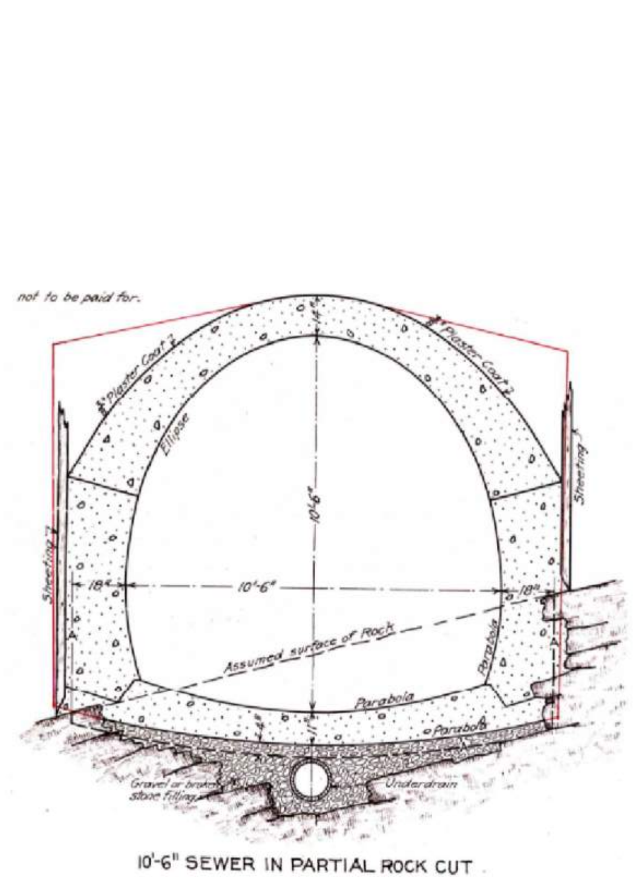
SECOND RIVER YARD VENTURI FLOW METERS
TOP LEVEL PLAN AND SECTIONS

PROJECT NO. 5063-115247
FILE NAME: C002PLPR
SHEET NO. C-2



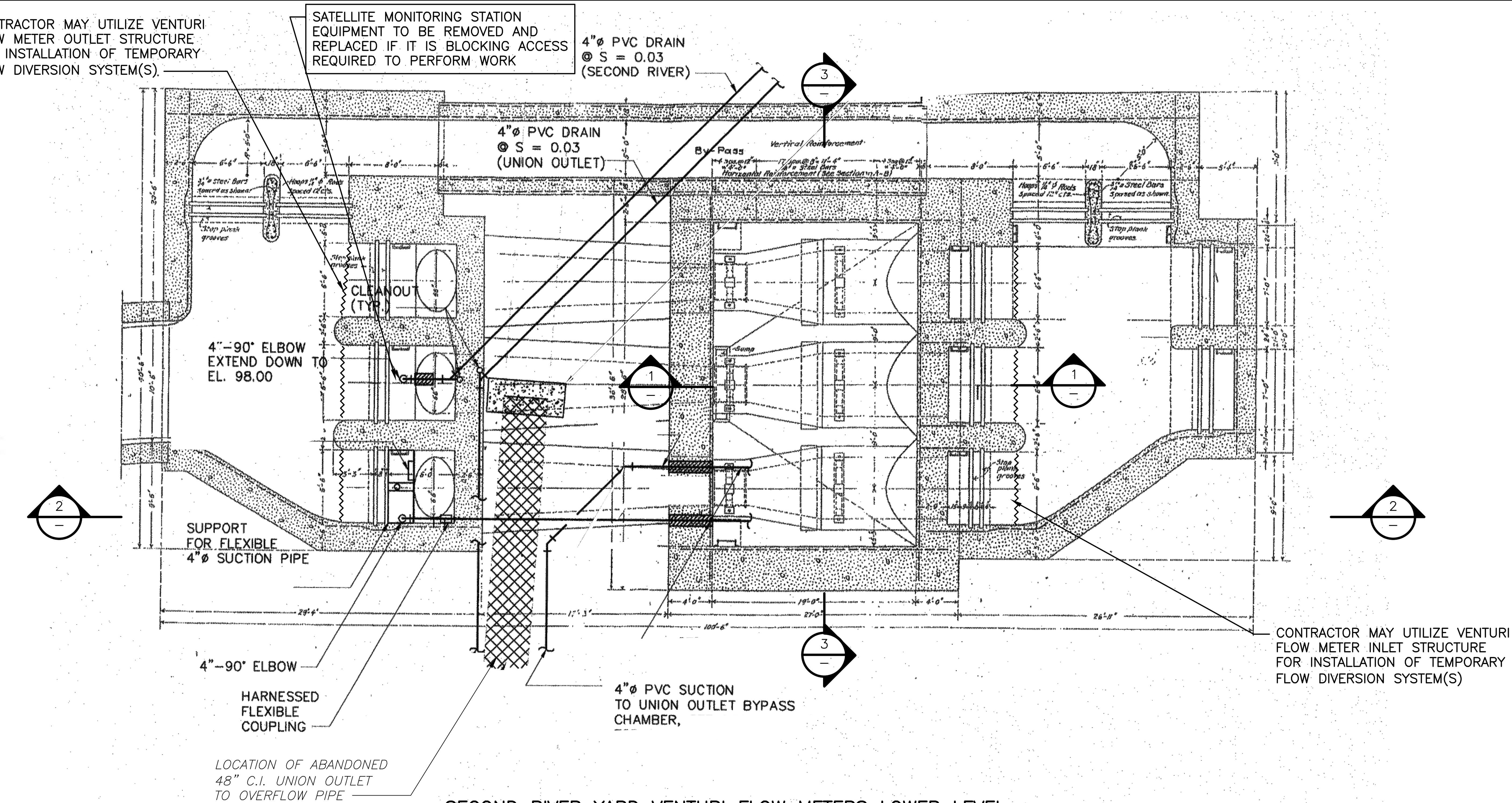
MI-040 CROSS SECTION

DETAIL A
NOT TO SCALE



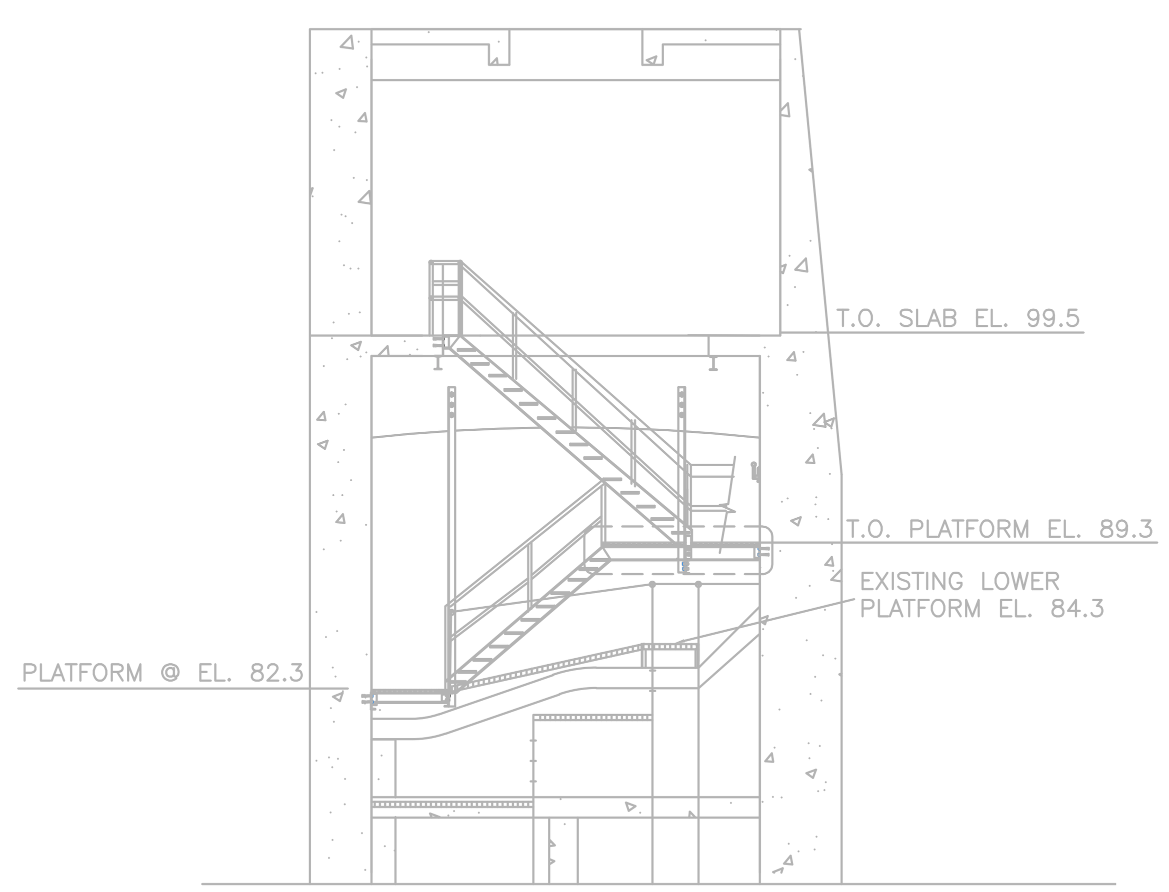
126" SEWER CROSS SECTION

DETAIL B
NOT TO SCALE

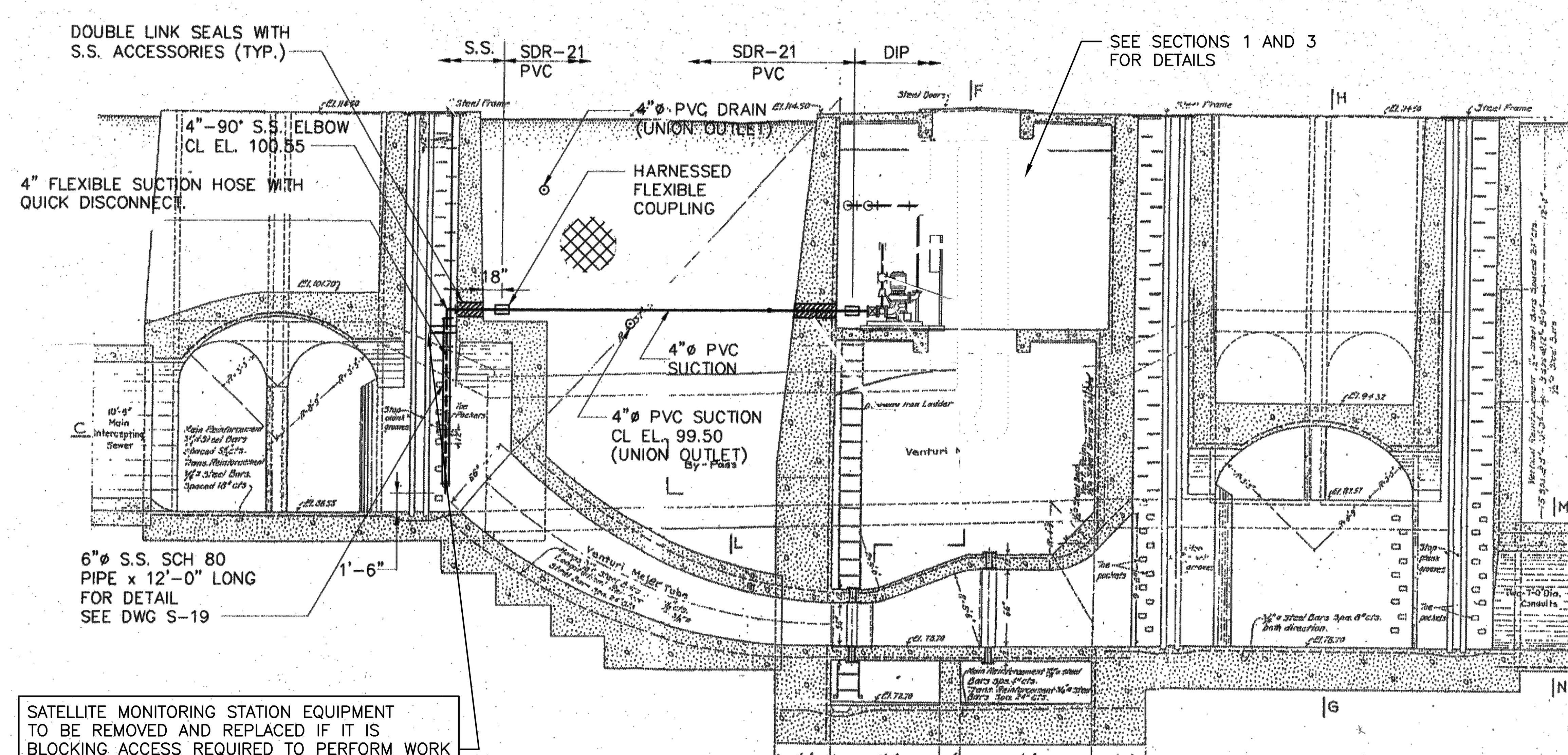


SECOND RIVER YARD VENTURI FLOW METERS LOWER LEVEL

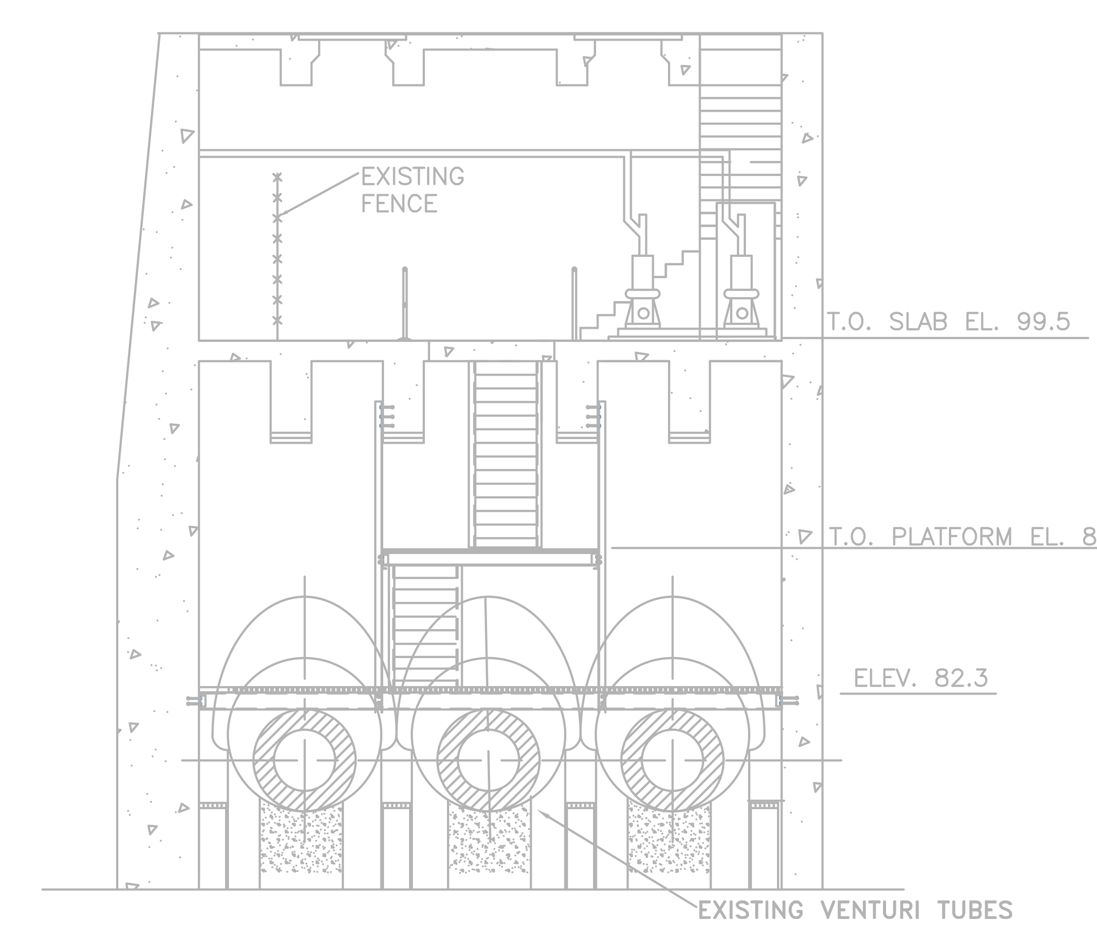
PLAN
1/8" = 1'-0"



SECTION 1
1/8" = 1'-0"



SECTION 2
1/8" = 1'-0"



SECTION 3
1/8" = 1'-0"

1/8" = 1'- 0"
4 2 0 4 8

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/23	TPC	SHS	Addenda No.2

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

Digitally signed by Matthew S Young
Date: 2023.08.04 11:05:52 -04'00'

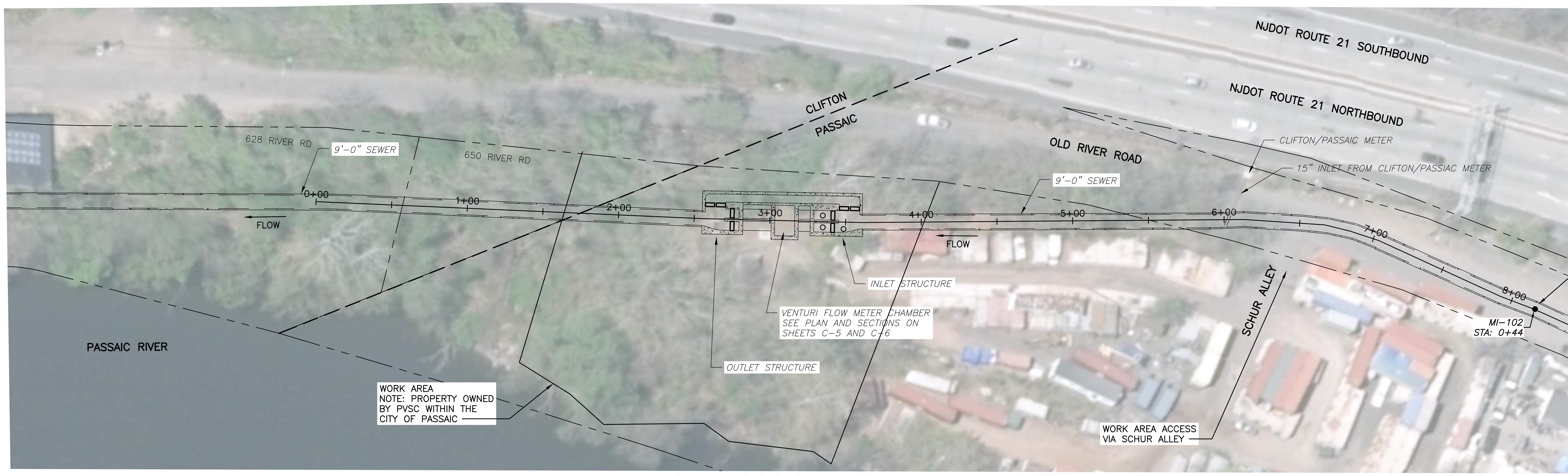
PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS
REHABILITATION PROJECT

SECOND RIVER YARD VENTURI FLOW METERS
LOWER LEVEL PLAN AND SECTION

PROJECT NO. 5063-115247
FILE NAME: C003PLPR

SHEET NO.
C-3



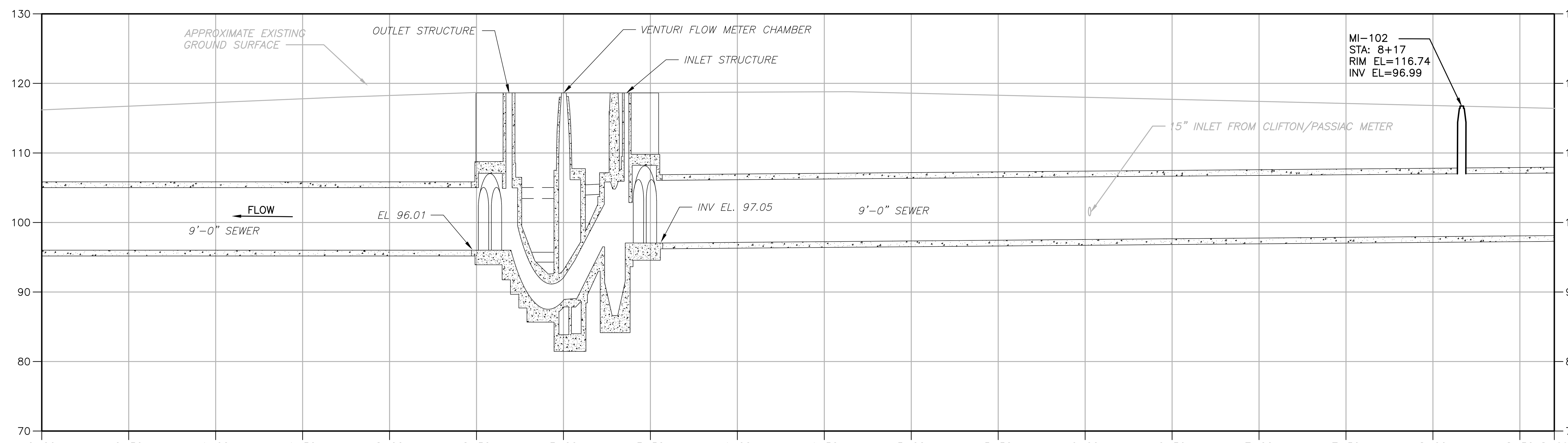
PASSAIC VENTURI FLOW METERS

SITE PLAN

1" = 40'

NOTES:

1. THE TWO VENTURI FLOW METERS IN THE PASSAIC VENTURI FLOW METER CHAMBER ARE TO BE BYPASSED AND INSPECTED. SHOULD ANY DEFECTS BE DISCOVERED DURING INSPECTION, THE VENTURI FLOW METER IS TO BE REHABILITATED. SEE SHEETS C-5 AND C-6 FOR PLANS AND SECTIONS OF THE VENTURI FLOW METER CHAMBER.
2. ALL EQUIPMENT, VEHICLES AND MATERIALS FOR WORK SHALL BE CONFINED TO DESIGNATED PVSC-OWNED PROJECT WORK AREA AND SHALL NOT IMPEDE TRAFFIC ON ADJACENT ROADWAY.



PROFILE

HOR: 1"=40'; VER:1"=4'

1" = 4'

2 0 4

1" = 40'

20 0 40

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY Matthew S. Young No. 24GE05715000 LICENSED PROFESSIONAL ENGINEER

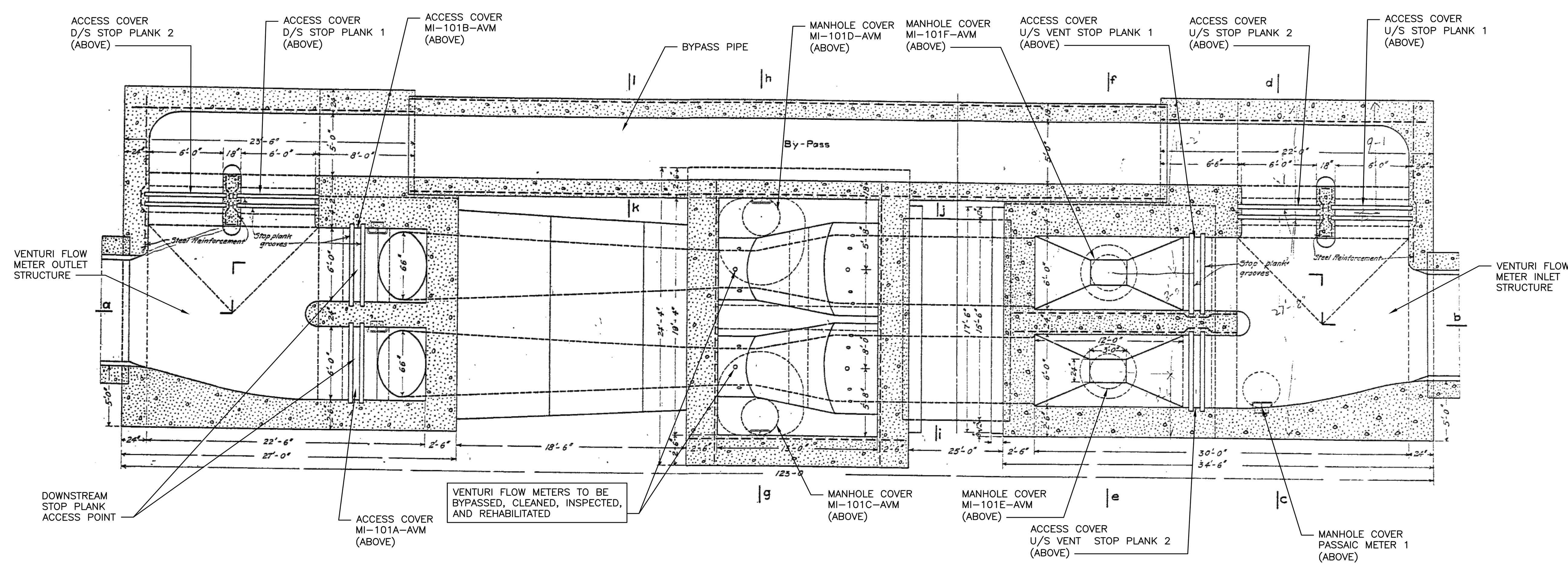
Digitally signed by Matthew S Young
Date: 2023.05.12 14:01:29 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS REHABILITATION PROJECT

PASSAIC VENTURI FLOW METERS
SITE PLAN AND PROFILE

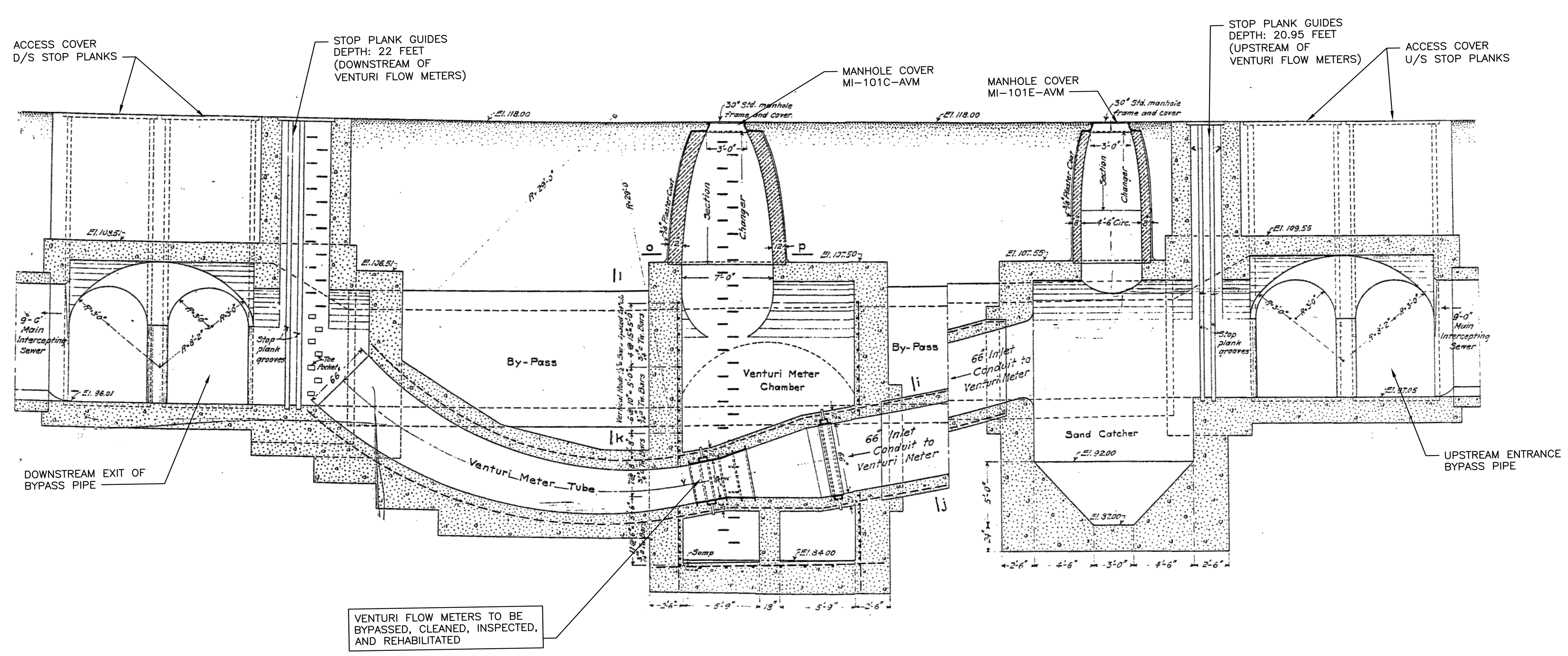
PROJECT NO. 5063-115247
FILE NAME: C004PLPR
SHEET NO.
C-4



PASSAIC VENTURI FLOW METERS LOWER LEVEL

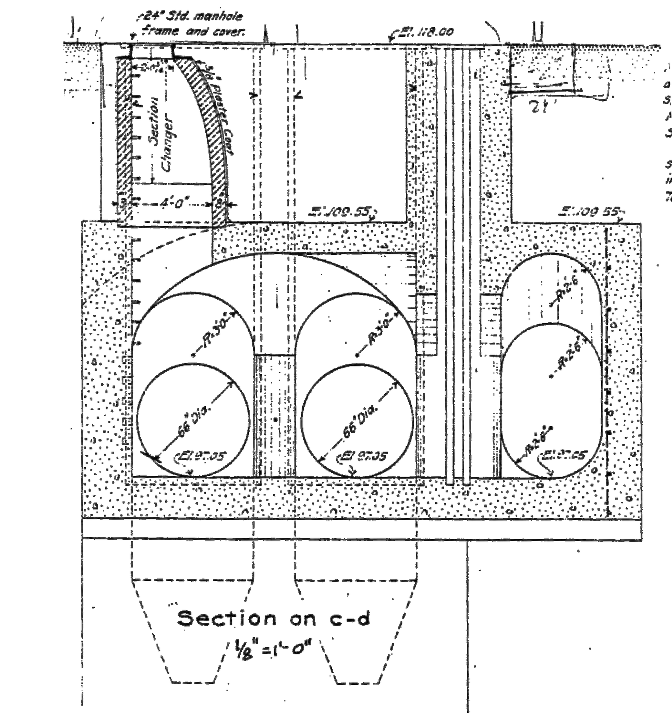
PLAN

1/8" = 1'-0"



SECTION A-B

1/8" = 1'-0"



SECTION C-D

1/8" = 1'-0"

PROPOSED SEQUENCE OF WORK:

THE CONTRACTOR SHALL PERFORM THE FOLLOWING SCOPE OF WORK IN THE FOLLOWING SUGGESTED SEQUENCE OF OPERATIONS: (ALTERNATE PROCEDURES MUST BE SUBMITTED AND APPROVED BY ENGINEER.)

1. THE CONTRACTOR WILL NEED TO REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE DOWNSTREAM SIDE OR EXIT OF THE BYPASS PIPE.
2. CLEAN AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. ASSUME HEAVY CLEANING AND DEBRIS REMOVAL. NOTIFY ENGINEER 48-HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITHIN 24-HOURS.
3. PERFORM REHABILITATION OF BYPASS PIPE AS DIRECTED BY ENGINEER.
4. PERFORM 3D LASER SCAN INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
5. PRIOR TO REMOVING UPSTREAM STOP LOGS ON THE BYPASS PIPE AND THE ISOLATION OF THE VENTURI FLOW METER, THE CONTRACTOR WILL FURNISH AND INSTALL THE SPECIFIED TEMPORARY FLOW METER WITHIN MH MI-102. REFER TO SPECIFICATION SECTION 331210.
6. REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE UPSTREAM SIDE OR ENTRANCE OF THE BYPASS PIPE.
7. ISOLATE ONE (1) VENTURI FLOW METER AT BOTH THE UPSTREAM AND DOWNSTREAM END UTILIZING STOP PLANKS AND EXISTING STOP PLANK GROOVES AND/OR A TEMPORARY FLOW DIVERSION SYSTEM DESIGNED AND INSTALLED BY THE CONTRACTOR. REFER TO SPECIFICATION SECTION 331210. THE UPSTREAM ENTRANCE OF THE VENTURI FLOW METER SHALL BE ISOLATED PRIOR TO DOWNSTREAM EXIT.
8. AFTER VENTURI FLOW METER HAS BEEN ISOLATED, INSPECT CONDITION OF STOP GROOVES AT UPSTREAM ENTRANCE AND DOWNSTREAM EXIT.
9. PERFORM REHABILITATION OF STOP GROOVES AS DIRECTED BY ENGINEER.
10. IF NECESSARY, REMOVE THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES THAT MAY INTERFERE WITH THE CLEANING, INSPECTION, AND REHABILITATION OF THE VENTURI FLOW METER.
11. DEWATER, CLEAN, AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER. NOTIFY ENGINEER 48-HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITH 24-HOURS.
12. CONTRACTOR TO PERFORM REHABILITATION OF METER AS DIRECTED BY ENGINEER.
13. PERFORM 3D LASER SCAN INSPECTION OF VENTURI FLOW METER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
14. IF NECESSARY, REINSTALL THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES.
15. REINSTATE FLOW IN THE VENTURI FLOW METER BY REMOVAL OF STOP PLANKS AND/OR TEMPORARY FLOW DIVERSION SYSTEM. REMOVE FLOW DIVERSION SYSTEM FROM DOWNSTREAM EXIT OF VENTURI FLOW METER PRIOR TO REMOVAL FROM UPSTREAM ENTRANCE.
16. REPEAT STEPS 7-15 FOR EACH VENTURI FLOW METER.
17. UPON COMPLETION OF STEPS 7-16 FOR THIS SITE LOCATION, REMOVE TEMPORARY FLOW METER FROM MI-102.
18. FURNISH AND INSTALL NEW STOP PLANKS WITHIN THE UPSTREAM ENTRANCE AND DOWNSTREAM EXIT OF THE VENTURI FLOW METER BYPASS PIPE.

NOTES:

1. STOP PLANKS ARE CURRENTLY INSTALLED AT INLET AND OUTLET OF THE VENTURI FLOW METER BYPASS PIPE. NEW STOP PLANKS ARE TO BE INSTALLED TO THE SAME ELEVATION IN ACCORDANCE WITH ITEM 17. OF THE PROPOSED SEQUENCE OF WORK.
2. RECORD DRAWINGS INDICATE THAT STOP PLANK GROOVES ARE FOUR (4) INCHES WIDE AND FOUR (4) INCHES DEEP.
3. CURRENT DIMENSIONS AND CONDITION OF STOP PLANK GROOVES WILL BE FIELD VERIFIED BY CONTRACTOR.
4. INSPECTION DATA FOR EACH ACCESS POINT IS PROVIDED IN APPENDIX TO PROJECT SPECIFICATIONS. LOCKED ACCESS POINTS SHALL BE COORDINATED WITH OWNER.
5. APPROXIMATELY 20 CY OF MATERIAL IS ANTICIPATED TO BE REMOVED FROM THE UPSTREAM CHAMBER AND BYPASS PIPE OF THE PASSAIC VENTURI FLOW METER.
6. ENGINEER MAY REQUEST MODIFICATIONS TO VENTURI FLOW METER, FOR DETAIL SEE APPENDIX G OF SPECIFICATIONS.

1/8" = 1'- 0"
4 2 0 4 8

1" = 40'
20 0 40

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/23	TPC	SHS	Addenda No.2

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY MATTHEW S. YOUNG No. 24GE05715000 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Matthew S Young
Date: 2023.08.04 11:06:15 -04'00'

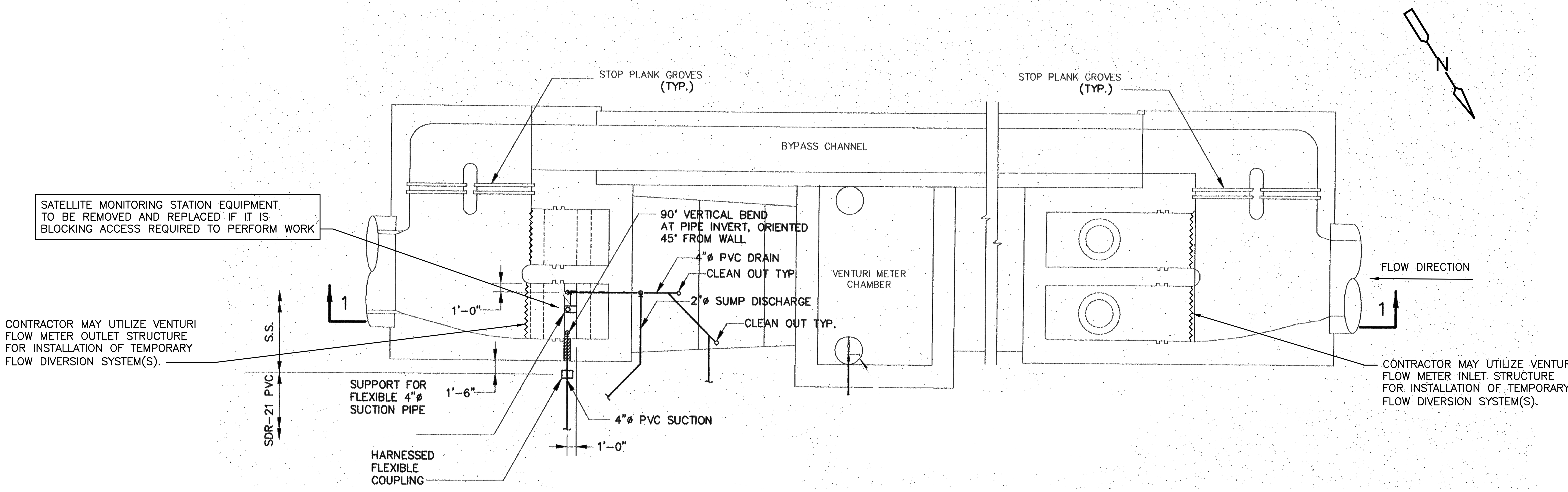
PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS
REHABILITATION PROJECT

PASSAIC VENTURI FLOW METERS
LOWER LEVEL PLAN AND SECTIONS

PROJECT NO. 5063-115247
FILE NAME: C005PLPR

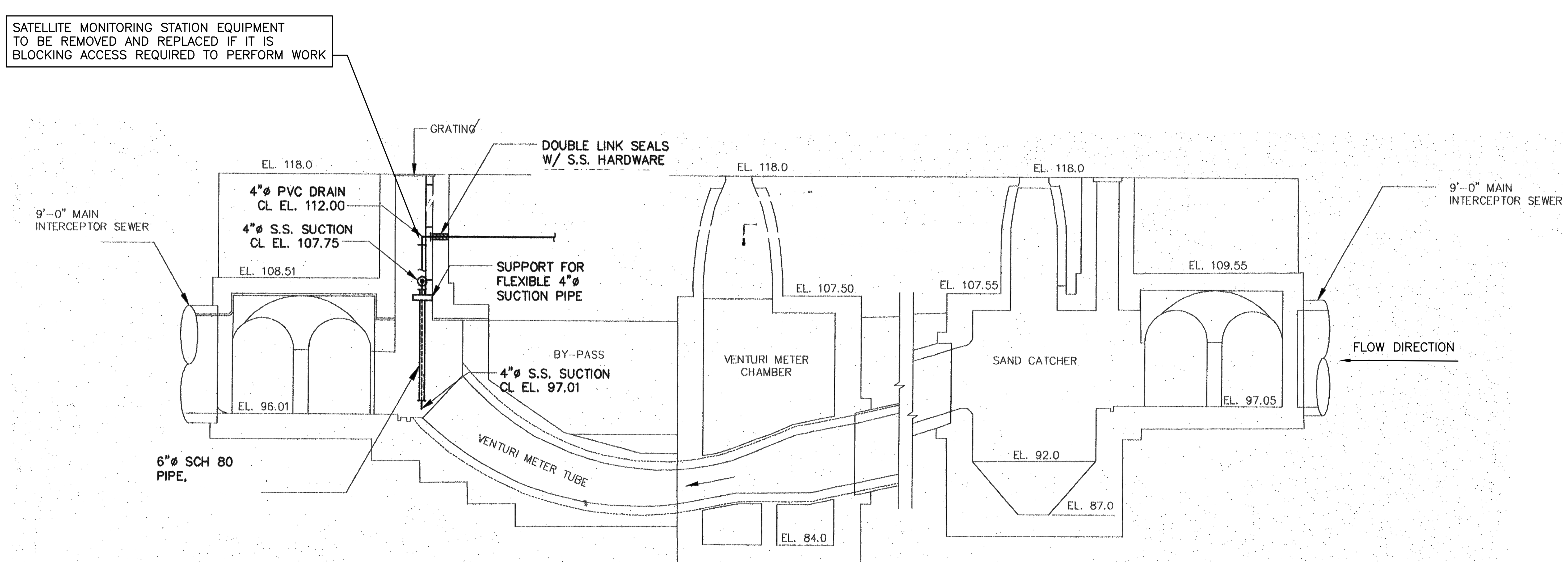
SHEET NO.
C-5



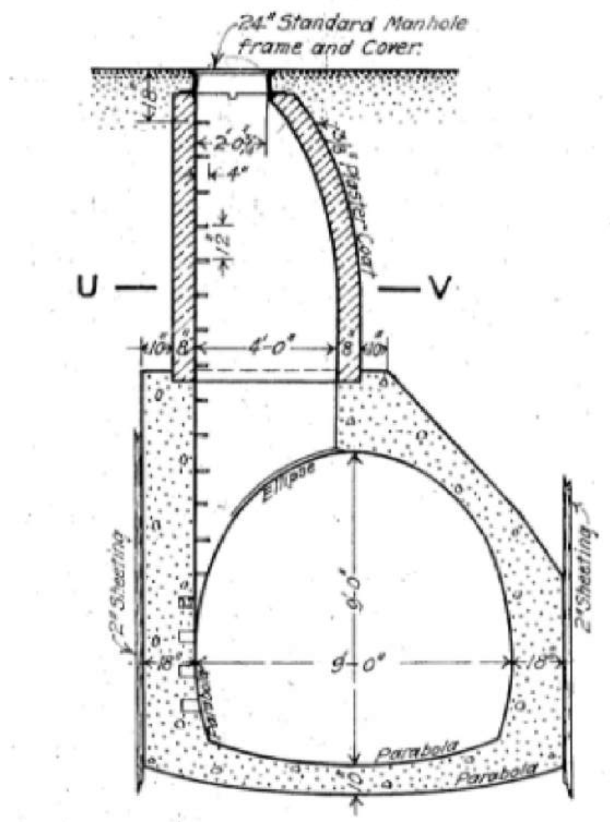
PASSAIC VENTURI FLOW METERS TOP LEVEL

PLAN

1/8" = 1'-0"

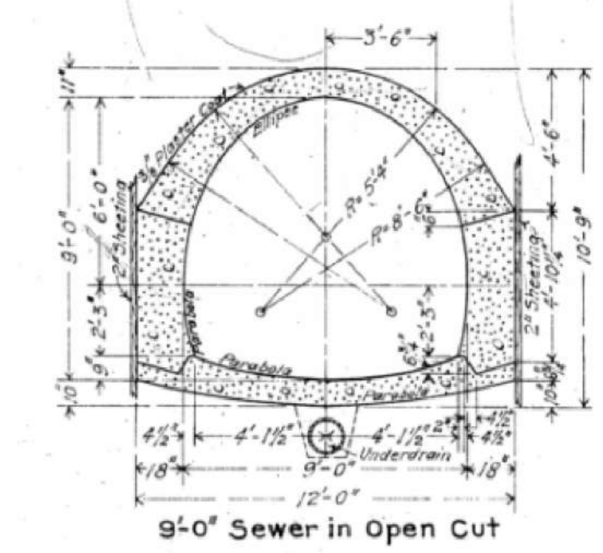


SECTION 1
1/8" = 1'-0"



MI-102 CROSS SECTION

DETAIL A
NOT TO SCALE



108" SEWER CROSS SECTION

DETAIL B
NOT TO SCALE

1/8" = 1'-0"
4 2 0 4 8

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/23	TPC	SHS	Addenda No.2

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
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Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY PROFESSIONAL ENGINEER LICENSED No. 24GE05715000

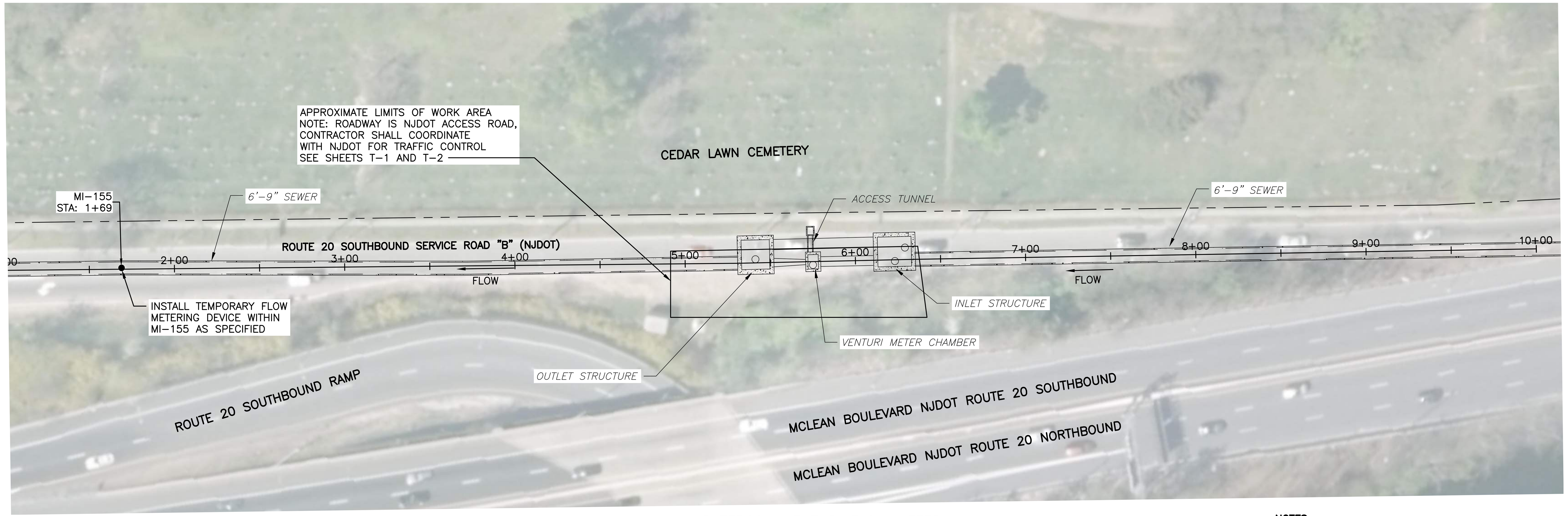
Digitally signed by Matthew S Young
Date: 2023.08.04 11:06:36 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS
REHABILITATION PROJECT

PASSAIC VENTURI FLOW METERS
TOP LEVEL PLAN AND SECTION

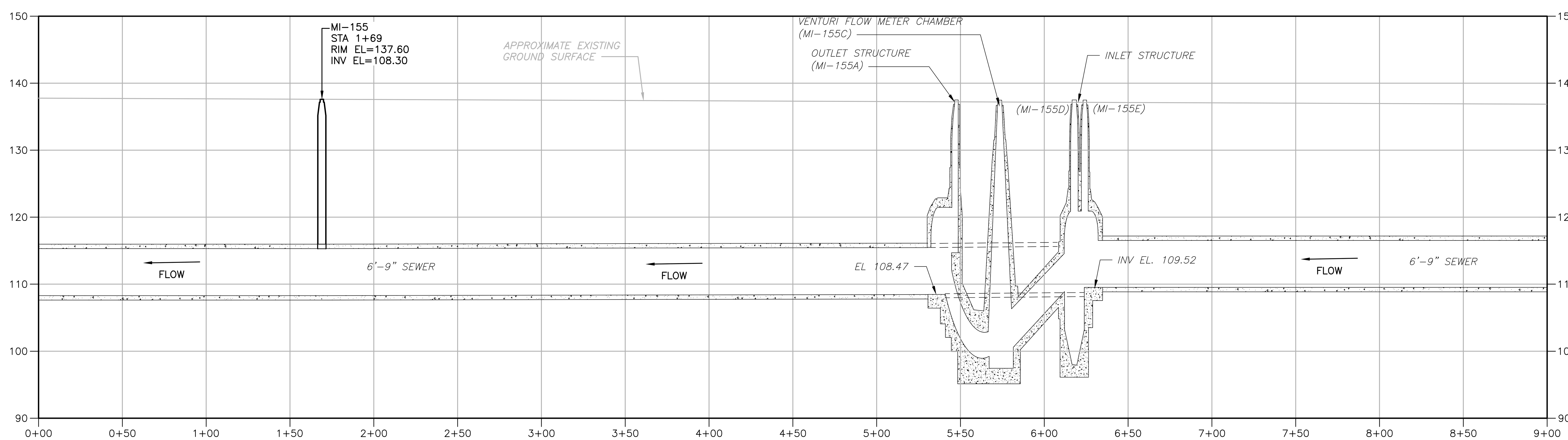
PROJECT NO. 5063-115247
FILE NAME: C006PLPR
SHEET NO.
C-6



PATERSON VENTURI FLOW METER
SITE PLAN
1" = 40'

NOTES:

1. THE ONE VENTURI FLOW METER IN THE PATERSON VENTURI FLOW METER CHAMBER IS TO BE BYPASSED AND INSPECTED. SHOULD ANY DEFECTS BE DISCOVERED DURING INSPECTION, THE VENTURI FLOW METER IS TO BE REHABILITATED. SEE SHEETS C-8 AND C-9 FOR PLANS AND SECTIONS OF THE VENTURI FLOW METER CHAMBER.



PROFILE
HOR: 1"=40'; VER:1"=4'

1" = 4'
2 0 4

1" = 40'
20 0 40

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

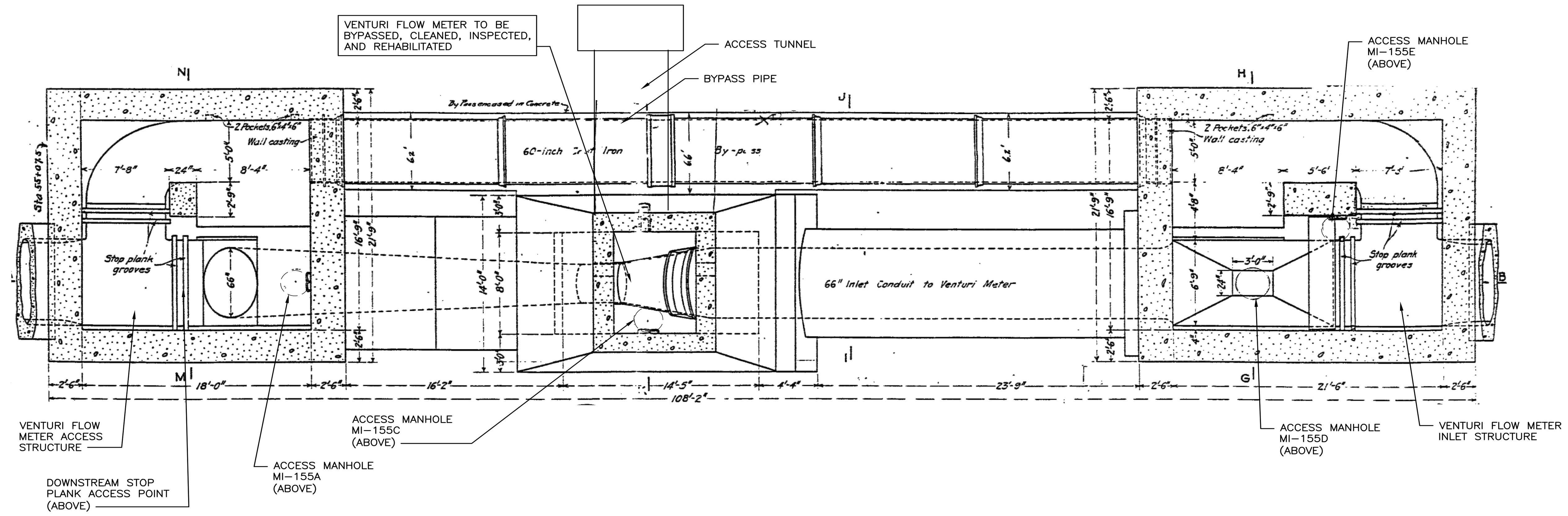
CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

Digitally signed by Matthew S Young
Date: 2023.05.12 14:02:40 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION
CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS
REHABILITATION PROJECT

PATERSON VENTURI FLOW METER
SITE PLAN AND PROFILE

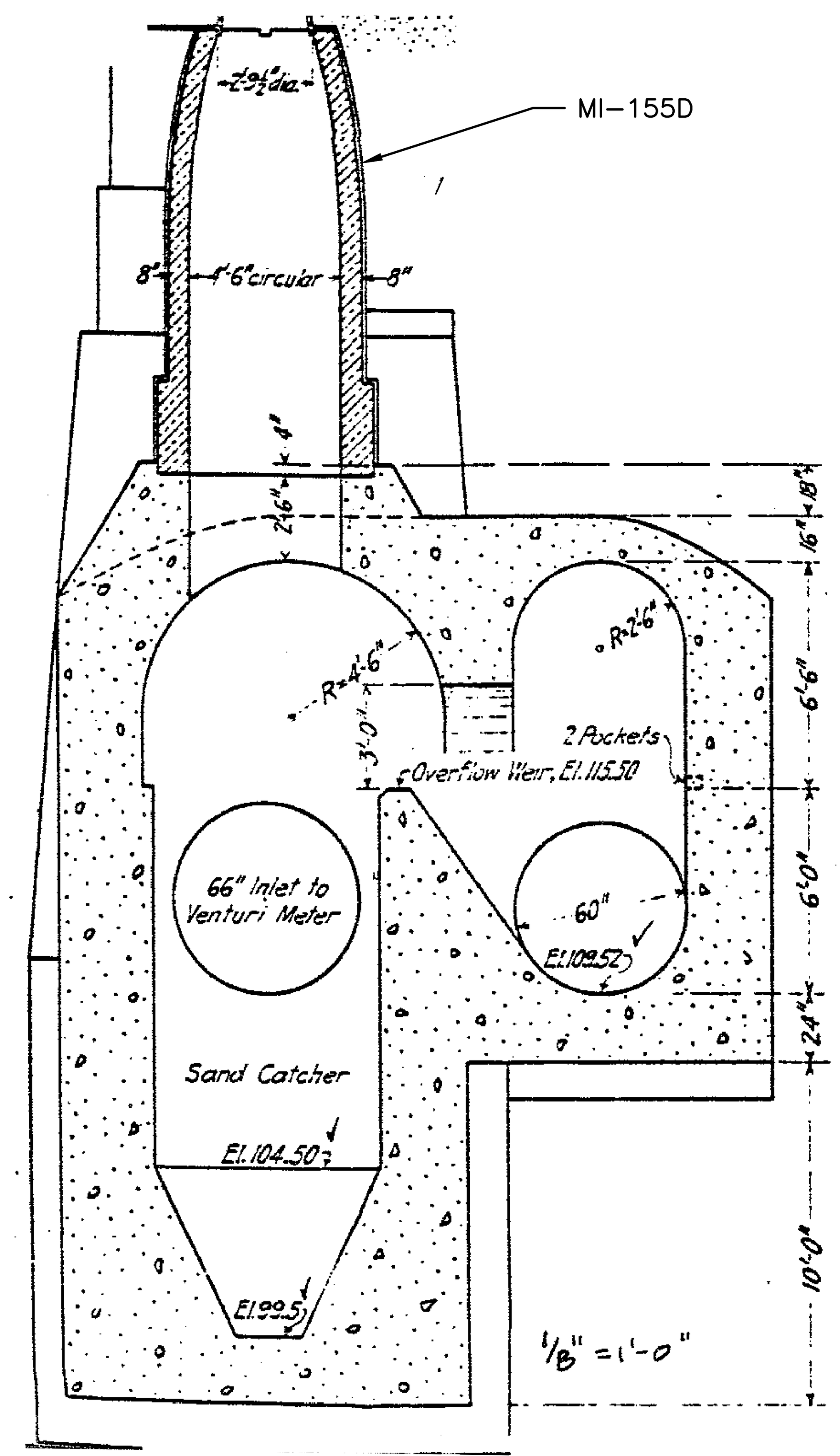
PROJECT NO. 5063-115247
FILE NAME: C007PLPR
SHEET NO. C-7



PATERSON VENTURI FLOW METER LOWER LEVEL AND ACCESS POINTS

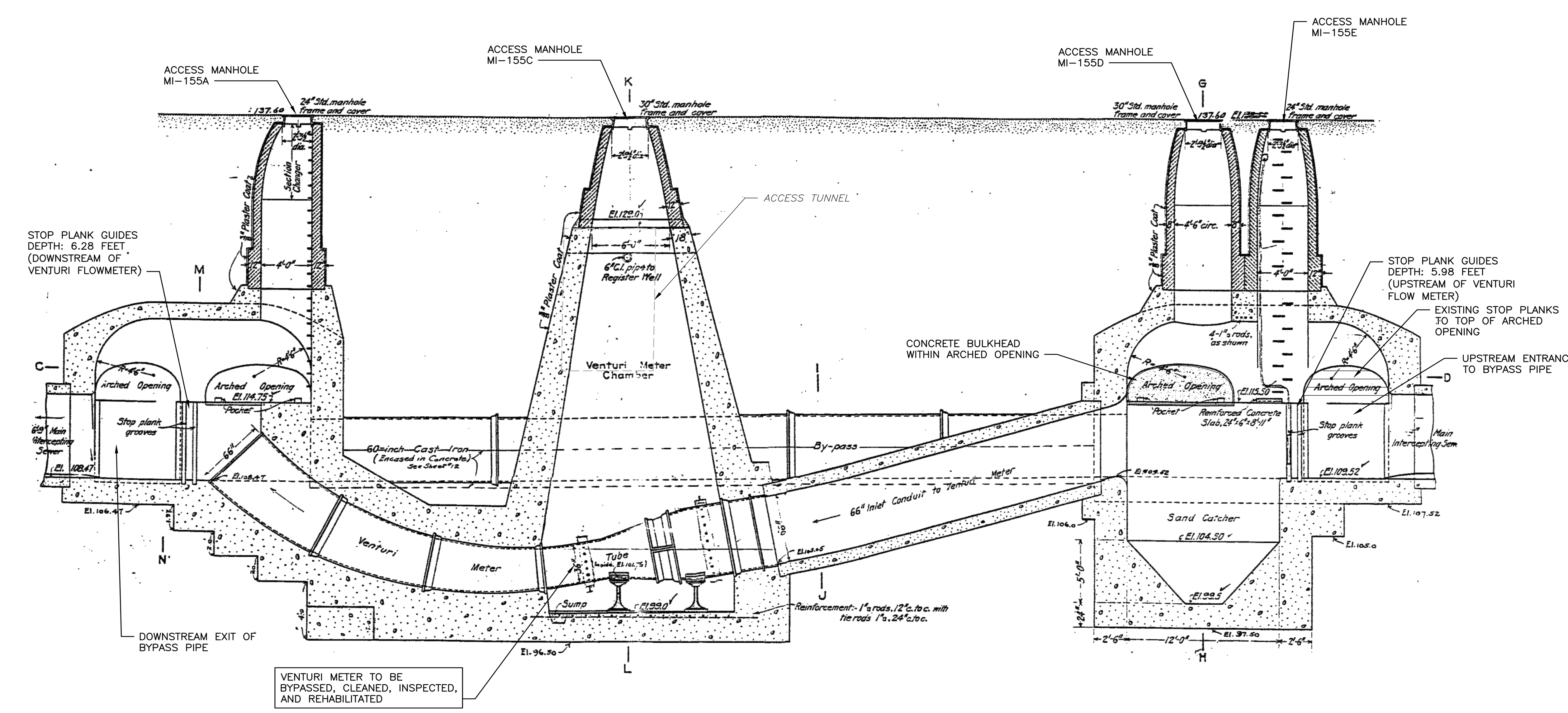
PLAN

1/8" = 1'-0"



SECTION G-H

1/4" = 1'-0"



SECTION A-B

1/8" = 1'-0"

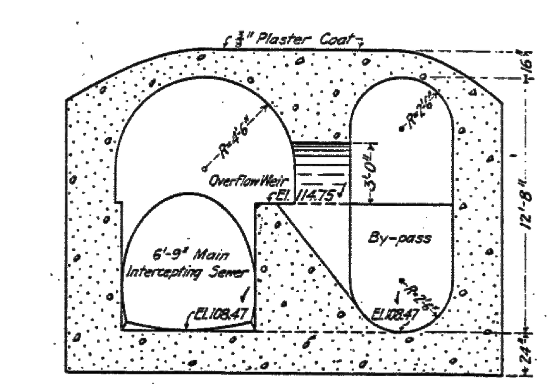
PROPOSED SEQUENCE OF WORK:

THE CONTRACTOR SHALL PERFORM THE FOLLOWING SCOPE OF WORK IN THE FOLLOWING SUGGESTED SEQUENCE OF OPERATIONS: (ALTERNATE PROCEDURES MUST BE SUBMITTED AND APPROVED BY ENGINEER.)

1. THE CONTRACTOR WILL NEED TO REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE DOWNSTREAM SIDE OR EXIT OF THE BYPASS PIPE.
2. CLEAN AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. ASSUME HEAVY CLEANING AND DEBRIS REMOVAL. NOTIFY ENGINEER 48-HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITHIN 24-HOURS.
3. PERFORM REHABILITATION OF BYPASS PIPE AS DIRECTED BY ENGINEER.
4. PERFORM 3D LASER SCAN INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
5. PRIOR TO REMOVING UPSTREAM STOP LOGS ON THE BYPASS PIPE AND THE ISOLATION OF THE VENTURI FLOW METER, THE CONTRACTOR WILL FURNISH AND INSTALL THE SPECIFIED TEMPORARY FLOW METER WITHIN MH MI-155. REFER TO SPECIFICATION SECTION 331210.
6. REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE UPSTREAM SIDE OR ENTRANCE OF THE BYPASS PIPE.
7. ISOLATE ONE (1) VENTURI FLOW METER AT BOTH THE UPSTREAM AND DOWNSTREAM END UTILIZING STOP PLANKS AND EXISTING STOP PLANK GROOVES AND/OR A TEMPORARY FLOW DIVERSION SYSTEM DESIGNED AND INSTALLED BY THE CONTRACTOR. REFER TO SPECIFICATION SECTION 331210. THE UPSTREAM ENTRANCE OF THE VENTURI FLOW METER SHALL BE ISOLATED PRIOR TO DOWNSTREAM EXIT.
8. AFTER VENTURI FLOWMETER HAS BEEN ISOLATED, INSPECT CONDITION OF STOP GROOVES AT UPSTREAM ENTRANCE AND DOWNSTREAM EXIT.
9. PERFORM REHABILITATION OF STOP GROOVES AS DIRECTED BY ENGINEER.
10. IF NECESSARY, REMOVE THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES THAT MAY INTERFERE WITH THE CLEANING, INSPECTION, AND REHABILITATION OF THE VENTURI FLOW METER.
11. DEWATER, CLEAN, AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER. NOTIFY ENGINEER 48-HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITH 24-HOURS.
12. CONTRACTOR TO PERFORM REHABILITATION OF METER AS DIRECTED BY ENGINEER.
13. PERFORM 3D LASER SCAN INSPECTION OF VENTURI FLOW METER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
14. IF NECESSARY, REINSTALL THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES.
15. REINSTATE FLOW IN THE VENTURI FLOW METER BY REMOVAL OF STOP PLANKS AND/OR TEMPORARY FLOW DIVERSION SYSTEM. REMOVE FLOW DIVERSION SYSTEM FROM DOWNSTREAM EXIT OF VENTURI FLOW METER PRIOR TO REMOVAL FROM UPSTREAM ENTRANCE.
16. UPON COMPLETION OF STEPS 7-15 FOR THIS SITE LOCATION, REMOVE TEMPORARY FLOW METER FROM MI-155.
17. FURNISH AND INSTALL NEW STOP PLANKS WITHIN THE UPSTREAM ENTRANCE AND DOWNSTREAM EXIT OF THE VENTURI FLOW METER BYPASS PIPE.

NOTES:

1. STOP PLANKS ARE CURRENTLY INSTALLED AT INLET AND OUTLET OF THE VENTURI FLOW METER BYPASS PIPE. NEW STOP PLANKS ARE TO BE INSTALLED TO THE SAME ELEVATION IN ACCORDANCE WITH ITEM 17. OF THE PROPOSED SEQUENCE OF WORK.
2. RECORD DRAWINGS INDICATE THAT STOP PLANK GROOVES ARE FOUR (4) INCHES WIDE AND FOUR (4) INCHES DEEP.
3. CURRENT DIMENSIONS AND CONDITION OF STOP PLANK GROOVES WILL BE FIELD VERIFIED BY CONTRACTOR.
4. INSPECTION DATA FOR EACH ACCESS POINT IS PROVIDED IN APPENDIX TO PROJECT SPECIFICATIONS. LOCKED ACCESS POINTS SHALL BE COORDINATED WITH OWNER.
5. APPROXIMATELY 15 CY OF MATERIAL IS ANTICIPATED TO BE REMOVED FROM THE UPSTREAM CHAMBER AND BYPASS PIPE OF THE PATERSON VENTURI FLOW METER.
6. ENGINEER MAY REQUEST MODIFICATIONS TO VENTURI FLOW METER, FOR DETAIL SEE APPENDIX G OF SPECIFICATIONS.



SECTION M-N

1/8" = 1'-0"

1" = 40'

20 0 40

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/23	TPC	SHS	Addenda No.2

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY No. 24GE05715000 LICENSED PROFESSIONAL ENGINEER

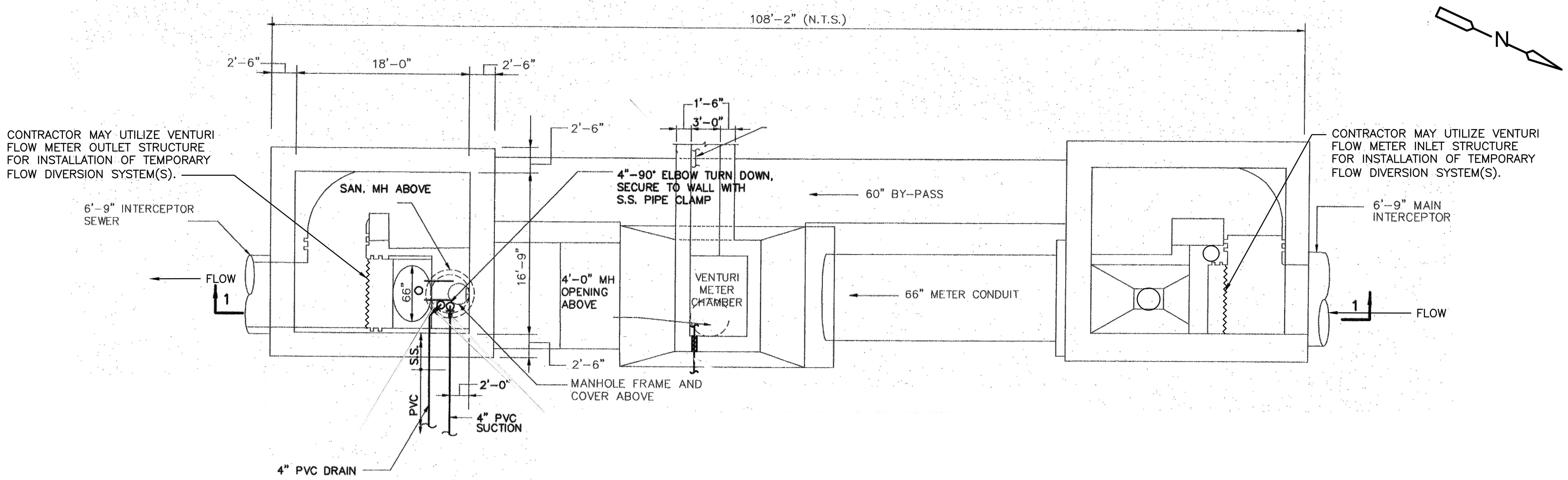
Digitally signed by Matthew S Young
Date: 2023.08.04 11:06:59 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION

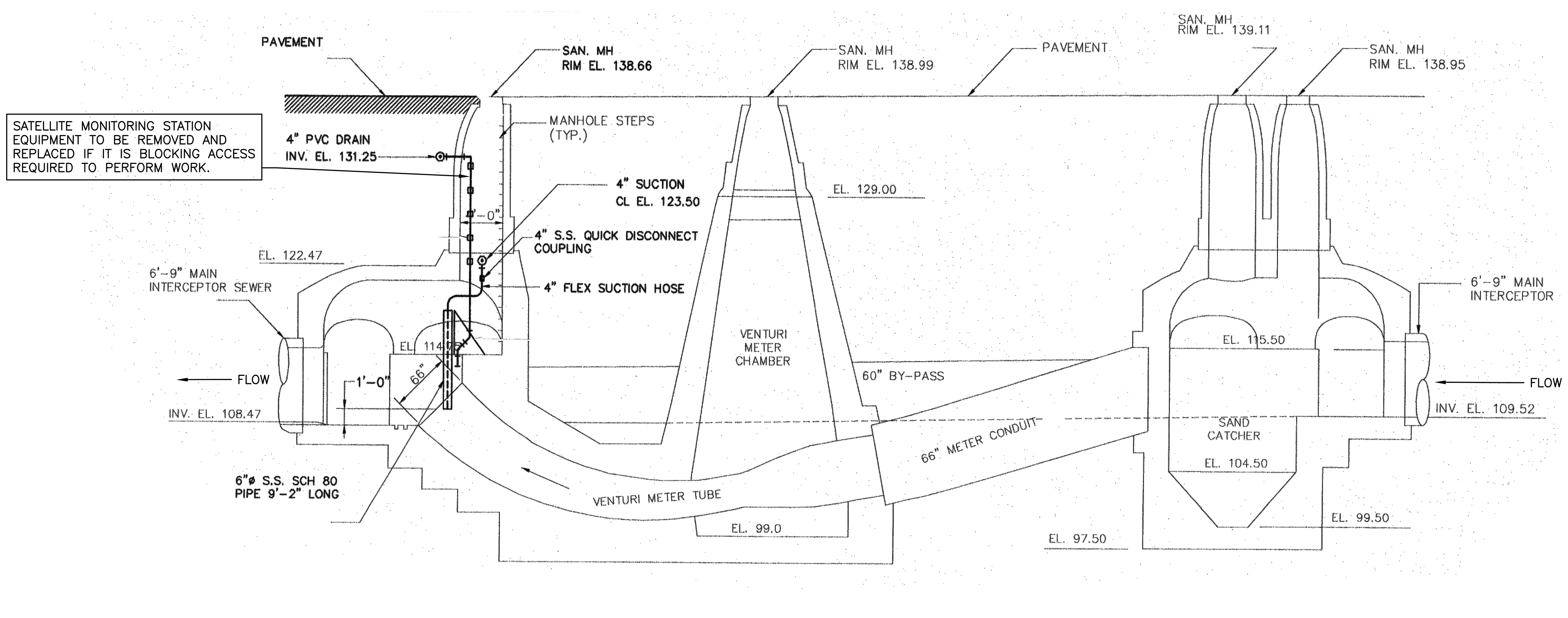
CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS REHABILITATION PROJECT

PATERSON VENTURI FLOW METER LOWER LEVEL PLAN AND SECTIONS

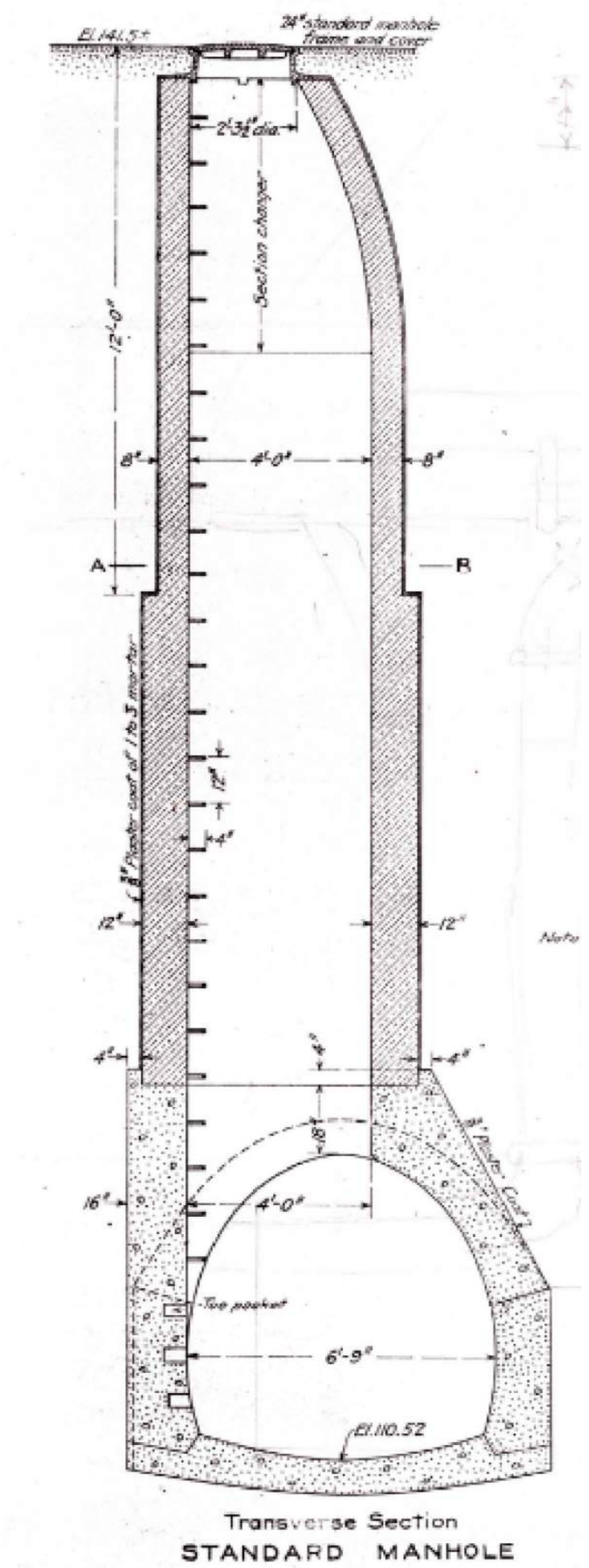
PROJECT NO. 5063-115247
FILE NAME: C008PLPR
SHEET NO. C-8



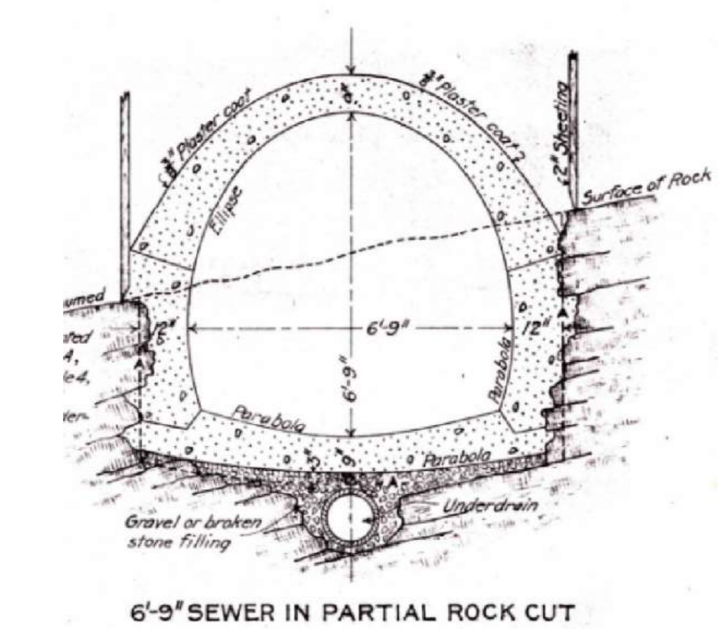
PATERSON VENTURI METER TOP LEVEL
PLAN
1/8" = 1'–0"



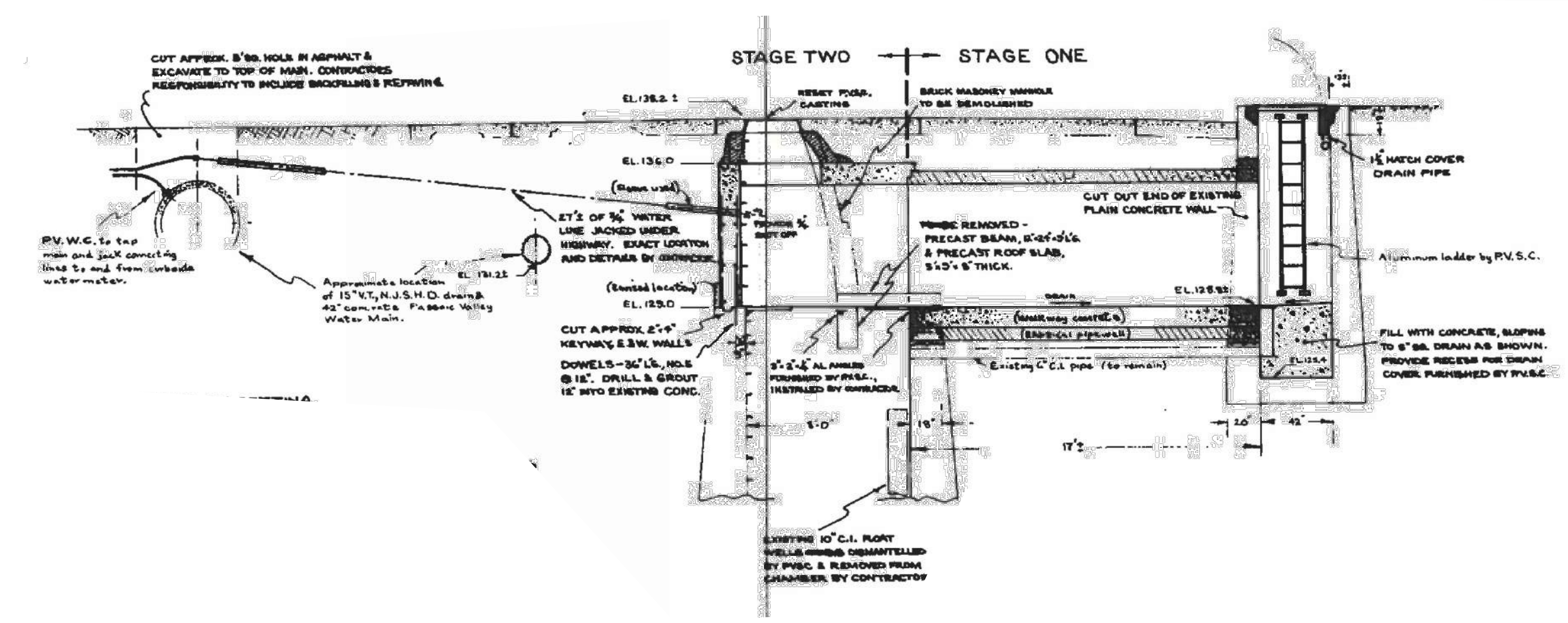
SECTION 1
1/8" = 1'–0"



MH–155 SECTION
DETAIL A
NOT TO SCALE



81" SEWER SECTION
DETAIL B
NOT TO SCALE



SECTION THROUGH CHAMBER
SECTION –
NOT TO SCALE

1/8" = 1'– 0"
4 2 0 4 8

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	8/23	TPC	SHS	Addenda No.2

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY, PROFESSIONAL ENGINEER, LICENSED, No. 24GE05715000

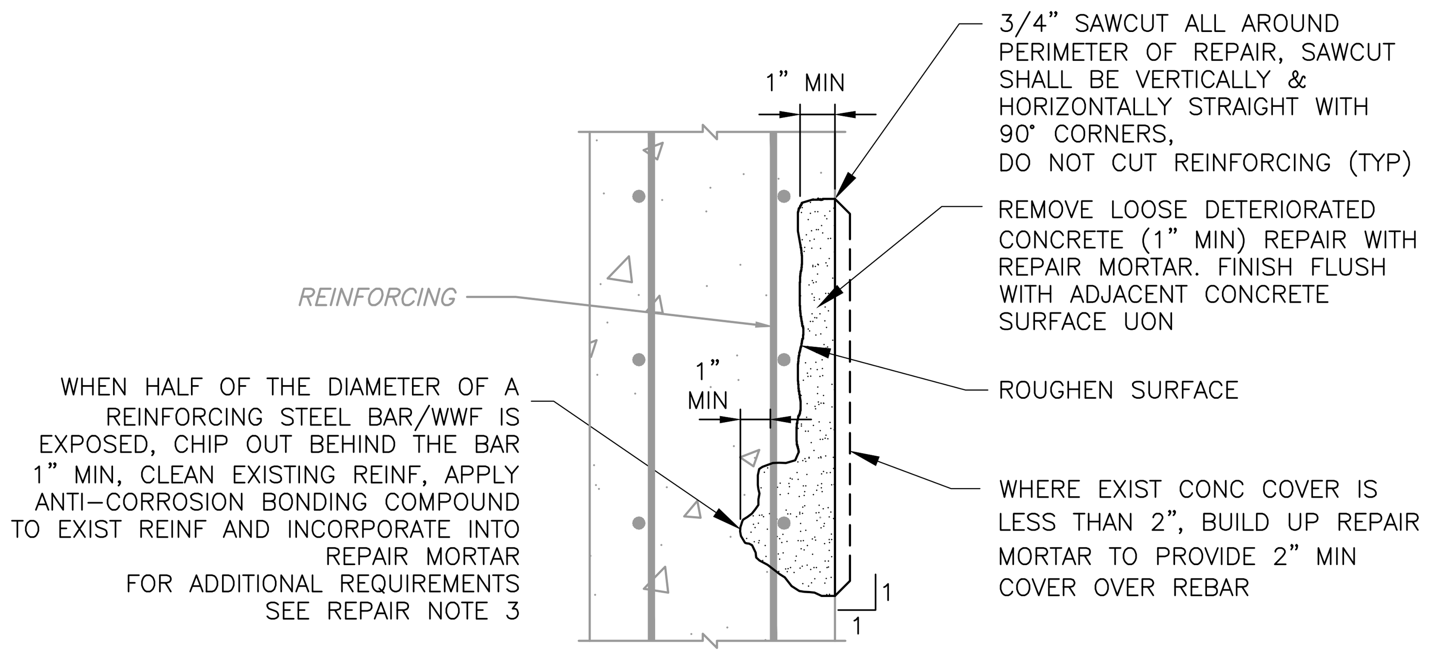
Digitally signed by Matthew S Young
Date: 2023.08.04 11:07:22 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS
REHABILITATION PROJECT

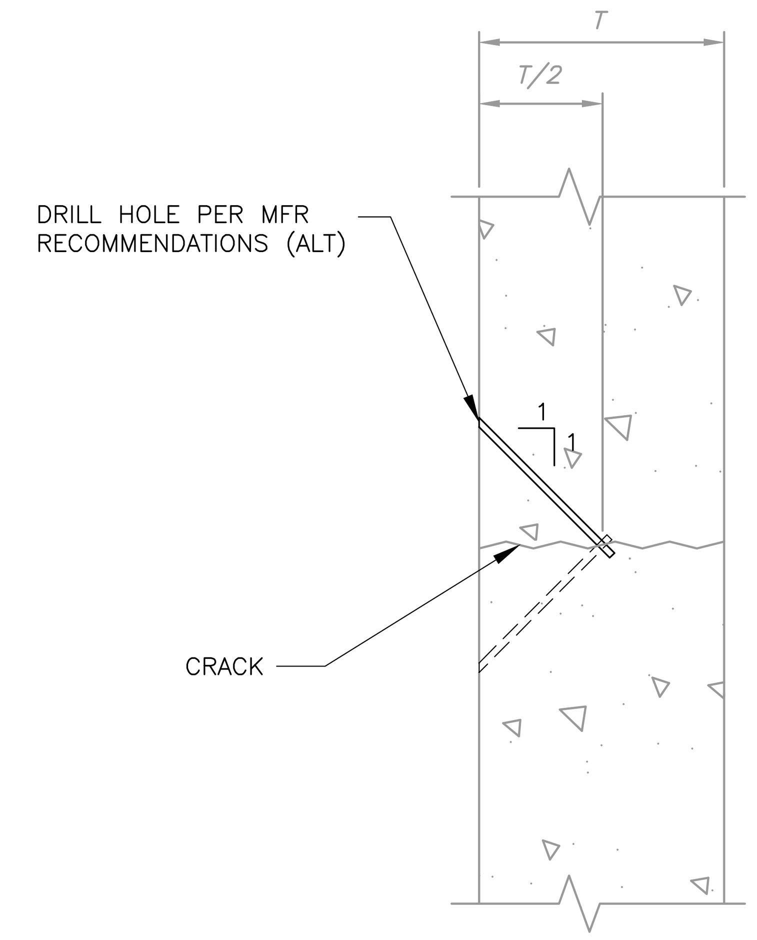
PATERSON VENTURI FLOW METER
TOP LEVEL PLAN AND SECTIONS

PROJECT NO. 5063–115247
FILE NAME: C009PLPR
SHEET NO.
C-9



REPAIR OF SPALLED/SCALLED/DETERIORATED CONCRETE (REPAIR TYPE 'A')

NTS

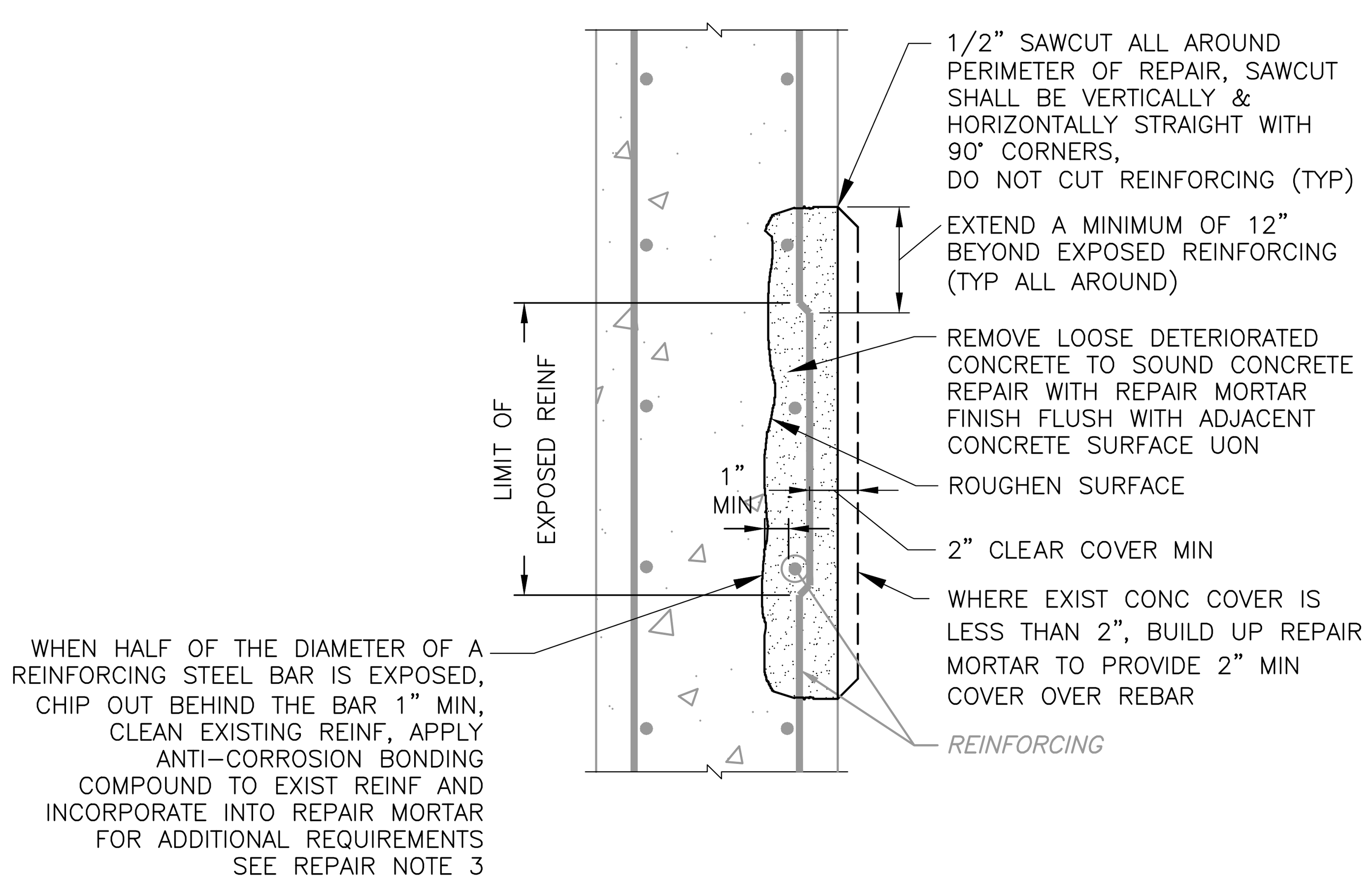


REPAIR CRACK BY CHEMICAL GROUT INJECTION (REPAIR TYPE 'B')

NTS

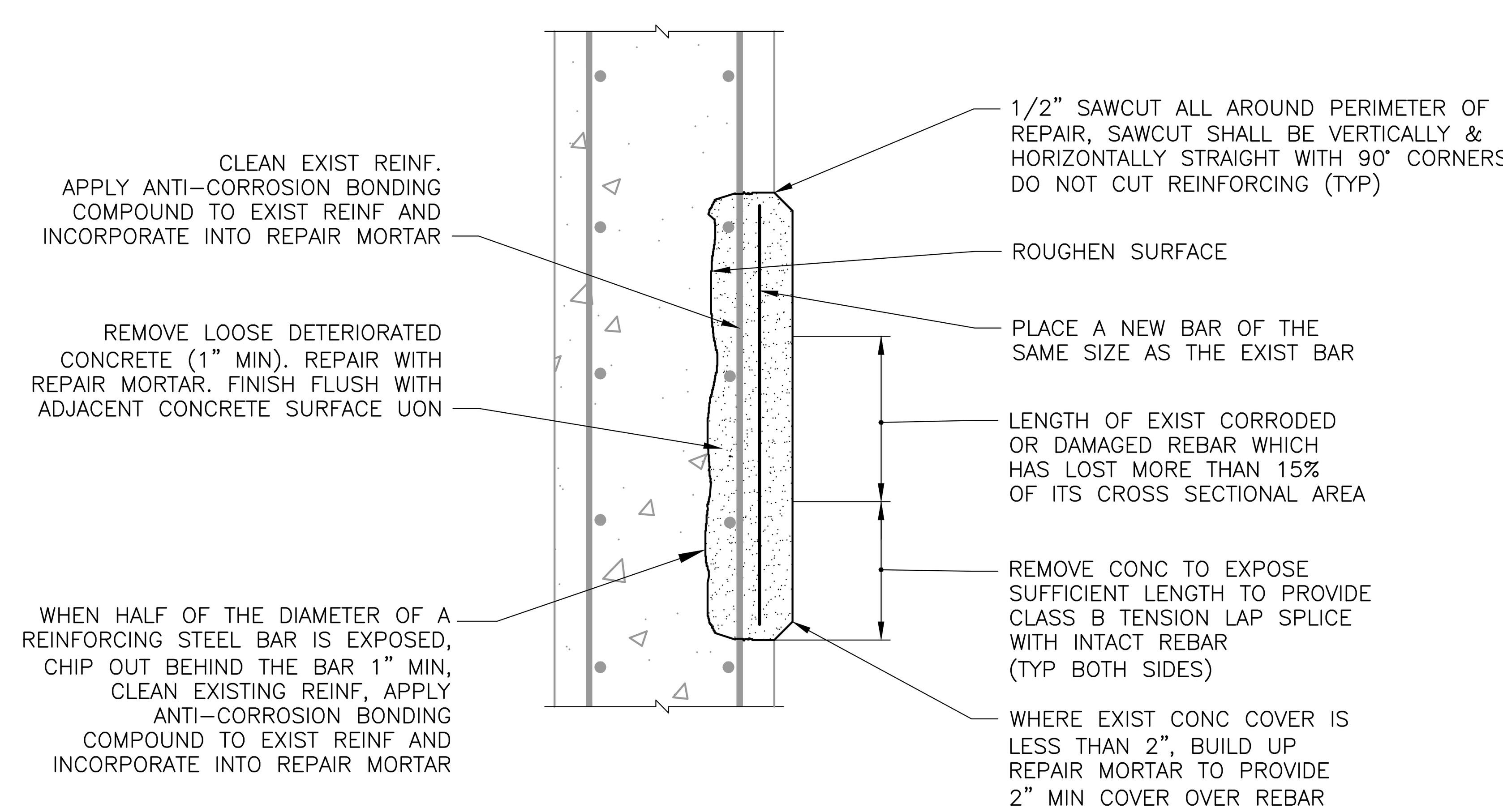
NOTES:

1. DETAILS SHOWN ARE INDICATIVE OF TYPICAL REPAIRS THAT COULD BE UTILIZED TO ADDRESS DEFECTS IN THE VENTURI FLOW METERS AND VENTURI FLOW METER BYPASS PIPES. ACTUAL REPAIRS ARE TO BE DETERMINED AFTER INSPECTION. ALL REPAIRS MUST BE COORDINATED AND APPROVED BY ENGINEER.
2. CONTRACTOR TO PERFORM INSPECTION OF VENTURI FLOW METERS AND VENTURI FLOW METER BYPASS PIPE AFTER CLEANING AND ISOLATING EACH.
3. CONTRACTOR TO PROVIDE REPORT OF INSPECTION AND PROPOSAL OF REPAIR WORK WITHIN 24 HOURS OF INSPECTION COMPLETION.



REPAIR OF EXPOSED REINFORCING BAR (REPAIR TYPE 'C')

NTS



INSTALLATION OF REPLACEMENT REBAR

NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. RODRIGUE
DRAWN BY: S. ENGEL
SHEET CHK'D BY: K. BOEHME
CROSS CHK'D BY: M. YOUNG
APPROVED BY:
DATE: FEBRUARY 2023

CDM Smith
110 FIELDCREST AVENUE, #8
EDISON, NEW JERSEY 08837
Tel: (732) 225-7000
COA NO. 24GA28020200

STATE OF NEW JERSEY MATTHEW S. YOUNG No. 24GE05715000 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Matthew S Young
Date: 2023.05.12 14:03:56 -04'00'

PASSAIC VALLEY SEWERAGE COMMISSION

CONTRACT NO. B253B
MAIN INTERCEPTOR VENTURI FLOW METERS REHABILITATION PROJECT

TYPICAL CONCRETE REPAIR DETAILS

PROJECT NO. 5063–115247
FILE NAME: S001STDT
SHEET NO.
SD-1

Temporary Flow Meter Installation w/in Main Interceptor Sewer Manholes

* Adjacent Sewer Hydraulics
* Information needed:
  * Area
  * Wetted Perimeter
  * Hydraulic Radius
  * Equivalent Diameter
* Installation of Temporary Flow Meter within adjacent manhole either at an upstream manhole or downstream manhole
* Maintain Flow Meter Reading

TIENet™ 360 LaserFlow™ Velocity Sensor

Installation and Operation Guide

TIENet™

LaserFlow™

Remote Sensing

Temporary Flow Meter Installation w/in Main Interceptor Sewer Manholes

* Adjacent Sewer Hydraulics

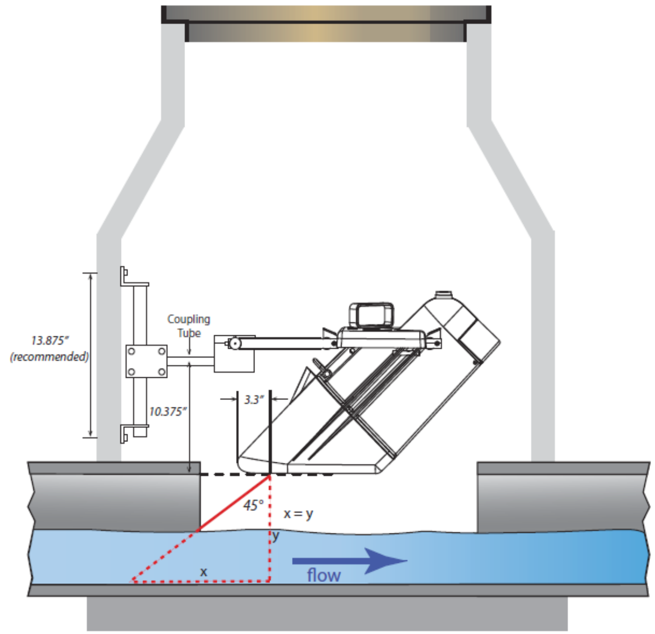
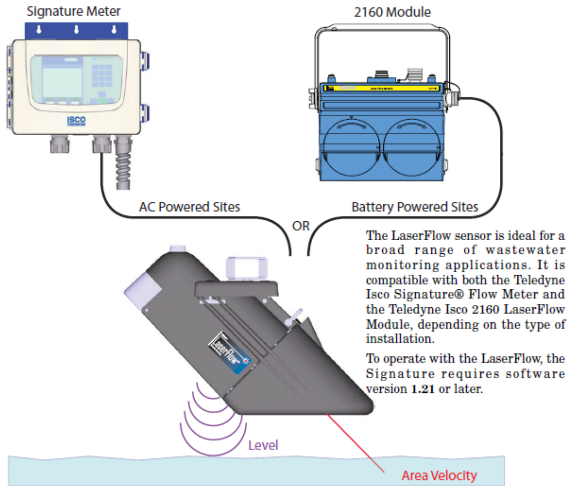


Figure 2-17 Typical manhole installation



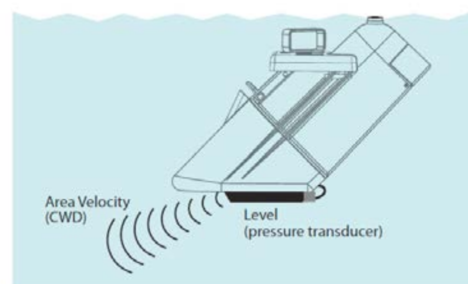


Figure 1-2 Optional submerged functionality

October 22, 2025

Temporary Flow Meter Installation w/in Main Interceptor Sewer Manholes

* Adjacent Sewer Hydraulics
  * PVSC Main Interceptor Sewer Manhole MI-040

Temporary Flow Meter Installation w/in Main Interceptor Sewer Manholes

- Adjacent Sewer Hydraulics
  - PVSC Main Interceptor Sewer Manhole MI-102

Temporary Flow Meter Installation w/in Main Interceptor Sewer Manholes

* Adjacent Sewer Hydraulics
  * PVSC Main Interceptor Sewer Manhole MI-155

* Currently work in Progress

* To be continued ……..

Second River Yard Venturi Flow Meters

- Adjacent Sewer Hydraulics

Contract No. B253B - Main Interceptor Venturi Flow Meters Rehabilitation Project

Second River Yard Meter Chamber Venturi Flow Meters
10'-6" Flat-Bottom 'Horsehoe Section' Elliptical Sewer Section

		[per AutoCAD]	[per AutoCAD]				
Height (ft)	Height (in)	Area (SF)	Wetted Perimeter (FT)	Hydraulic Radius (FT)	Equivalent Diameter (FT)	Equivalent Diameter (in)	(d / D) *100
10.50	126	88.3100390	34.2579000	2.5778007	10.6037651	127.2451809	100.0000%
10.25	123	87.8614490	34.1946417	2.5694508	10.5767987	126.9215847	99.7457%
10.00	120	87.0614130	34.0780000	2.5547689	10.5285343	126.3424112	99.2905%
9.75	117	86.0452390	33.9243083	2.5363889	10.4669098	125.6029177	98.7094%
9.50	114	84.8652360	33.7388667	2.5153553	10.3948917	124.7387010	98.0302%
9.25	111	83.5492280	33.5380250	2.4911791	10.3139799	123.7677586	97.2671%
9.00	108	82.1071500	33.3260167	2.4637553	10.2245817	122.6949800	96.4241%
8.75	105	80.5489470	33.1019500	2.4333596	10.1270975	121.5251705	95.5047%
8.50	102	78.8835690	32.8660333	2.4001548	10.0218601	120.2623210	94.5123%
8.25	99	77.1191050	32.6184333	2.3642799	9.9091419	118.9097034	93.4493%
8.00	96	75.2629430	32.3592750	2.3258538	9.7891652	117.4699824	92.3178%
7.75	93	73.3218950	32.0886167	2.2849815	9.6621083	115.9452992	91.1196%
7.50	90	71.3022920	31.8065250	2.2417505	9.5281109	114.3373311	89.8559%
7.25	87	69.2100580	31.5130000	2.1962383	9.3872777	112.6473325	88.5278%
7.00	84	67.0507720	31.2080417	2.1485094	9.2396804	110.8761651	87.1358%
6.75	81	64.8297180	30.8916083	2.0986191	9.0853597	109.0243162	85.6805%
6.50	78	62.5519270	30.5636333	2.0466129	8.9243256	107.0919070	84.1619%
6.25	75	60.2222110	30.2240500	1.9925262	8.7565576	105.0786909	82.5797%
6.00	72	57.8451920	29.8727417	1.9363871	8.5820036	102.9840433	80.9336%
5.75	69	55.4253280	29.5095917	1.8782140	8.4005785	100.8069422	79.2226%
5.50	66	52.9669370	29.1344333	1.8180184	8.2121616	98.5459396	77.4457%
5.25	63	50.4742120	28.7471083	1.7558014	8.0165930	96.1991155	75.6014%
5.00	60	47.9512430	28.3474167	1.6915560	7.8136687	93.7640246	73.6877%
4.75	57	45.4020290	27.9351500	1.6252653	7.6031348	91.2376176	71.7022%
4.50	54	42.8304930	27.5100500	1.5569035	7.3846786	88.6161427	69.6420%
4.25	51	40.2404970	27.0718667	1.4864323	7.1579181	85.8950177	67.5036%
4.00	48	37.6358490	26.6202917	1.4138030	6.9223877	83.0686522	65.2824%
3.75	45	35.0203190	26.1550083	1.3389527	6.6775186	80.1302235	62.9731%
3.50	42	32.3976480	25.6756583	1.2618040	6.4226137	77.0713643	60.5692%
3.25	39	29.7747500	25.1562667	1.1835918	6.1571413	73.8856957	58.0656%
3.00	36	27.1582530	24.6230167	1.1029621	5.8803879	70.5646546	55.4557%
2.75	33	24.5514610	24.0754833	1.0197702	5.5910546	67.0926546	52.7271%
2.50	30	21.9577000	23.5132083	0.9338453	5.2874769	63.4497228	49.8641%
2.25	27	19.3803240	22.9357083	0.8449848	4.9674737	59.6096843	46.8463%
2.00	24	16.8227220	22.3424333	0.7529494	4.6281049	55.5372587	43.6459%
1.75	21	14.2883240	21.7328167	0.6574539	4.2652619	51.1831429	40.2240%
1.50	18	11.7806150	21.1062250	0.5581583	3.8729246	46.4750951	36.5241%
1.25	15	9.3031370	20.4619500	0.4546554	3.4416743	41.3000915	32.4571%
1.00	12	6.8595040	19.7992583	0.3464526	2.9552989	35.4635871	27.8703%
0.75	9	4.4911070	18.0310667	0.2490761	2.3912873	28.6954478	22.5513%
0.50	6	2.4514660	14.7450000	0.1662574	1.7667211	21.2006532	16.6613%
0.25	3	0.8691260	10.4422917	0.0832313	1.0519532	12.6234387	9.9206%
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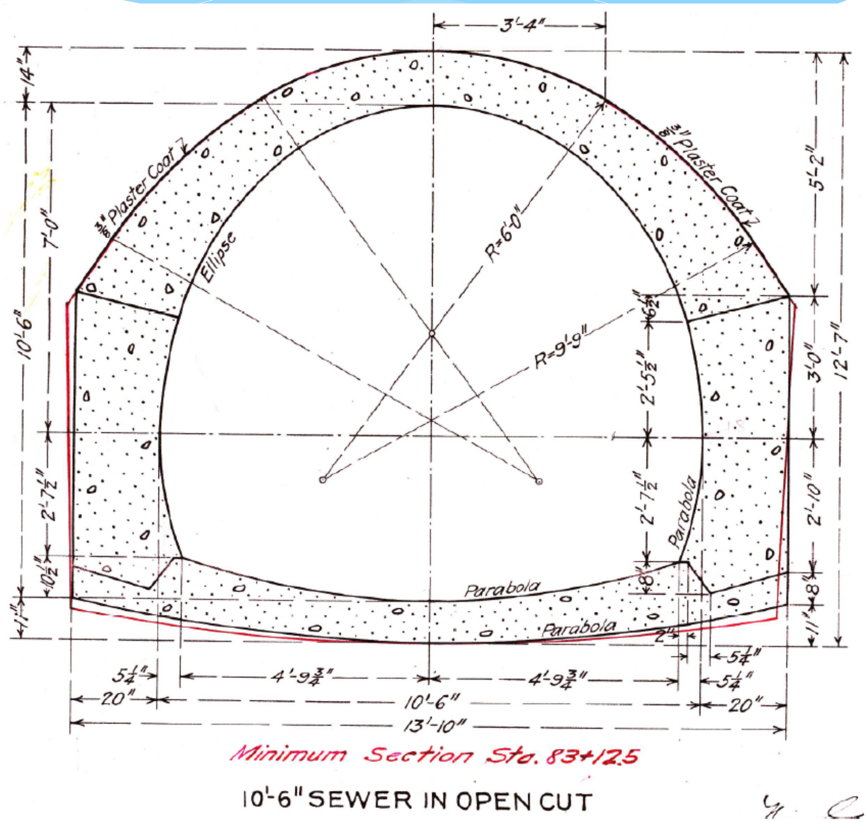

Passaic Meter Chamber Venturi Flow Meters

* Adjacent Sewer Hydraulics

Contract No. B253B - Main Interceptor Venturi Flow Meters Rehabilitation Project

Passaic Meter Chamber Venturi Flow Meters
9'-0" Flat-Bottom 'Horsehoe Section' Elliptical Sewer Section

Height (ft)	Height (in)	Area (SF) [per AutoCAD]	Wetted Perimeter (FT) [per AutoCAD]	Hydraulic Radius (FT)	Equivalent Diameter (FT)	Equivalent Diameter (in)	(d / D) *100
9.00	108	65.0629600	29.4094500	2.2123147	9.1016885	109.2202620	100.0000%
8.75	105	64.6338960	29.3431083	2.2026942	9.0716279	108.8595345	99.6697%
8.50	102	63.8708790	29.2207167	2.1858081	9.0179226	108.2150718	99.0797%
8.25	99	62.9036850	29.0591750	2.1646755	8.9493832	107.3925981	98.3266%
8.00	96	61.7829200	28.8638667	2.1404935	8.8692986	106.4315827	97.4467%
7.75	93	60.5399120	28.6374083	2.1140150	8.7796247	105.3554965	96.4615%
7.50	90	59.1954540	28.3922500	2.0849159	8.6815893	104.1790717	95.3844%
7.25	87	57.7556960	28.1403500	2.0524157	8.5753622	102.9043459	94.2173%
7.00	84	56.2264250	27.8783000	2.0168527	8.4610701	101.5328416	92.9615%
6.75	81	54.6135180	27.6065250	1.9782830	8.3388303	100.0659636	91.6185%
6.50	78	52.9224960	27.3239250	1.9368556	8.2087158	98.5045893	90.1889%
6.25	75	51.1585660	27.0316500	1.8925432	8.0707564	96.8490771	88.6732%
6.00	72	49.3266680	26.7293167	1.8454145	7.9249394	95.0992727	87.0711%
5.75	69	47.4315080	26.4168917	1.7954992	7.7712079	93.2544944	85.3820%
5.50	66	45.4775850	26.0943417	1.7428140	7.6094586	91.3135028	83.6049%
5.25	63	43.4692200	25.7616167	1.6873638	7.4395383	89.2744594	81.7380%
5.00	60	41.4105760	25.4186333	1.6291425	7.2612384	87.1348607	79.7790%
4.75	57	39.3072930	25.0531917	1.5689535	7.0744328	84.8931939	77.7266%
4.50	54	37.1678630	24.6689417	1.5066663	6.8792146	82.5505747	75.5817%
4.25	51	34.9977500	24.2688417	1.4420857	6.6753666	80.1043992	73.3421%
4.00	48	32.8020800	23.8525250	1.3752037	6.4625773	77.5509276	71.0042%
3.75	45	30.5858640	23.4195833	1.3059952	6.2404432	74.8853186	68.5636%
3.50	42	28.3540200	22.9695500	1.2344177	6.0084490	72.1013881	66.0147%
3.25	39	26.1113980	22.5018917	1.1604090	5.7659400	69.1912804	63.3502%
3.00	36	23.8627950	22.0160167	1.0838834	5.5120826	66.1449908	60.5611%
2.75	33	21.6129870	21.5112583	1.0047291	5.2458088	62.9497053	57.6356%
2.50	30	19.3667400	20.9868667	0.9228028	4.9657325	59.5887900	54.5584%
2.25	27	17.1288390	20.4419917	0.8379242	4.6700230	56.0402764	51.3094%
2.00	24	14.9041050	19.8757083	0.7498654	4.3562020	52.2744240	47.8615%
1.75	21	12.6974170	19.2869500	0.6583424	4.0208026	48.2496310	44.1764%
1.50	18	10.5137360	18.6745083	0.5629993	3.6587572	43.9050867	40.1987%
1.25	15	8.3581330	18.0370417	0.4633871	3.2621934	39.1463202	35.8416%
1.00	12	6.2358120	17.3730000	0.3589370	2.8177442	33.8129305	30.9585%
0.75	9	4.1521450	16.6806333	0.2489201	2.2992771	27.5913253	25.2621%
0.50	6	2.2675150	13.6442167	0.1661887	1.6991438	20.3897260	18.6684%
0.25	3	0.8042850	9.6652167	0.0832144	1.0119523	12.1434277	11.1183%
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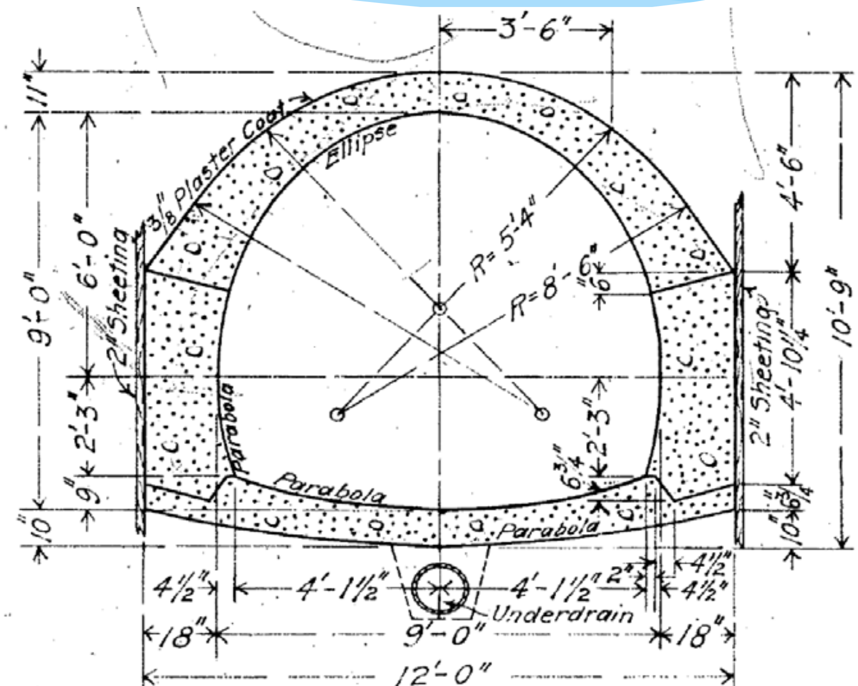

9'-0" Sewer in Open Cut

Paterson Meter Chamber Venturi Flow Meter

* Adjacent Sewer Hydraulics

Contract No. B253B - Main Interceptor Venturi Flow Meters Rehabilitation Project

Paterson Meter Chamber Venturi Flow Meters
6'-9" Flat-Bottom 'Horsehoe Section' Elliptical Sewer Section

		[per AutoCAD]	[per AutoCAD]				
Height (ft)	Height (in)	Area (SF)	Wetted Perimeter (FT)	Hydraulic Radius (FT)	Equivalent Diameter (FT)	Equivalent Diameter (in)	(d / D) *100
6.75	81	37.2854270	22.1964250	1.6797942	6.8900856	82.6810277	100.0000%
6.50	78	36.9130240	22.1223750	1.6685832	6.8555906	82.2670867	99.4994%
6.25	75	36.2427350	21.9887500	1.6482399	6.7930614	81.5167370	98.5918%
6.00	72	35.3867620	21.8159833	1.6220567	6.7123636	80.5483629	97.4206%
5.75	69	34.3883220	21.6115167	1.5912035	6.6169911	79.4038934	96.0364%
5.50	66	33.2733570	21.3805667	1.5562430	6.5088366	78.1060392	94.4667%
5.25	63	32.0599620	21.1256417	1.5175852	6.3890540	76.6686484	92.7282%
5.00	60	30.7624460	20.8472917	1.4756088	6.2584313	75.1011760	90.8324%
4.75	57	29.3924070	20.5494833	1.4303234	6.1174811	73.4097731	88.7867%
4.50	54	27.9595570	20.2305167	1.3820486	5.9665077	71.5980919	86.5956%
4.25	51	26.4725380	19.8929750	1.3307481	5.8056767	69.6681207	84.2613%
4.00	48	24.9389100	19.5357333	1.2765792	5.6349984	67.6199802	81.7842%
3.75	45	23.3656930	19.1607583	1.2194555	5.4543675	65.4524094	79.1625%
3.50	42	21.7592490	18.7700667	1.1592526	5.2635289	63.1623466	76.3928%
3.25	39	20.1256570	18.3543500	1.0965061	5.0620927	60.7451122	73.4692%
3.00	36	18.4707450	17.9230583	1.0305577	4.8495034	58.1940405	70.3838%
2.75	33	16.7999130	17.4731833	0.9614684	4.6249663	55.4995960	67.1249%
2.50	30	15.1185570	17.0033333	0.8891525	4.3874303	52.6491636	63.6774%
2.25	27	13.4319860	16.5139250	0.8133733	4.1354729	49.6256743	60.0206%
2.00	24	11.7444180	16.0099333	0.7335707	3.8669701	46.4036407	56.1237%
1.75	21	10.0611780	15.4782000	0.6500225	3.5791465	42.9497580	51.9463%
1.50	18	8.3889970	14.9170000	0.5623783	3.2682109	39.2185312	47.4335%
1.25	15	6.7347050	14.3242917	0.4701597	2.9282918	35.1395013	42.5001%
1.00	12	5.1052920	13.6976667	0.3727125	2.5495607	30.5947282	37.0033%
0.75	9	3.5079790	13.0342417	0.2691356	2.1134090	25.3609080	30.6732%
0.50	6	1.9594710	11.8020833	0.1660276	1.5795176	18.9542116	22.9245%
0.25	3	0.6957820	8.3653333	0.0831745	0.9412211	11.2946532	13.6605%
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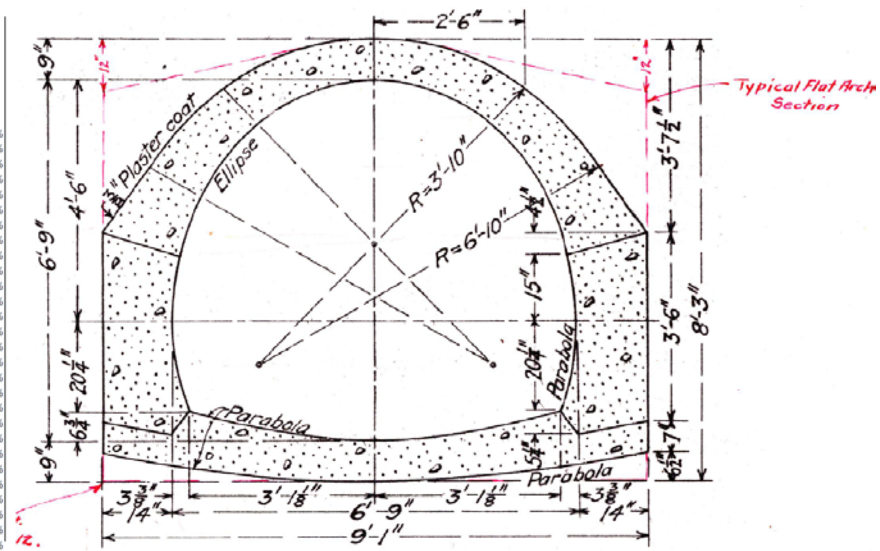


Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

Construction Activities

PROPOSED SEQUENCE OF WORK:

THE CONTRACTOR SHALL PERFORM THE FOLLOWING SCOPE OF WORK IN THE FOLLOWING SUGGESTED SEQUENCE OF OPERATIONS: (ALTERNATE PROCEDURES MUST BE SUBMITTED AND APPROVED BY ENGINEER.)

1. THE CONTRACTOR WILL NEED TO REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE DOWNSTREAM SIDE OR EXIT OF THE BYPASS PIPE.
2. CLEAN AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. ASSUME HEAVY CLEANING AND DEBRIS REMOVAL. NOTIFY ENGINEER 48–HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITHIN 24–HOURS.
3. PERFORM REHABILITATION OF BYPASS PIPE AS DIRECTED BY ENGINEER.
4. PERFORM 3D LASER SCAN INSPECTION OF THE VENTURI FLOW METER BYPASS PIPE AND UPSTREAM PORTION OF THE VENTURI FLOW METER CHAMBER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
5. PRIOR TO REMOVING UPSTREAM STOP LOGS ON THE BYPASS PIPE AND THE ISOLATION OF THE VENTURI FLOW METER, THE CONTRACTOR WILL FURNISH AND INSTALL THE SPECIFIED TEMPORARY FLOW METER WITHIN MH MI–040. REFER TO SPECIFICATION SECTION 331210.
6. REMOVE THE EXISTING BULKHEAD/STOP PLANKS WITHIN THE UPSTREAM SIDE OR ENTRANCE OF THE BYPASS PIPE.
7. ISOLATE ONE (1) VENTURI FLOW METER AT BOTH THE UPSTREAM AND DOWNSTREAM END UTILIZING STOP PLANKS AND EXISTING STOP PLANK GROOVES AND/OR A TEMPORARY FLOW DIVERSION SYSTEM DESIGNED AND INSTALLED BY THE CONTRACTOR. REFER TO SPECIFICATION SECTION 331210. THE UPSTREAM ENTRANCE OF THE VENTURI FLOW METER SHALL BE ISOLATED PRIOR TO DOWNSTREAM EXIT.
8. AFTER VENTURI FLOW METER HAS BEEN ISOLATED, INSPECT CONDITION OF STOP GROOVES AT UPSTREAM ENTRANCE AND DOWNSTREAM EXIT.
9. PERFORM REHABILITATION OF STOP GROOVES AS DIRECTED BY ENGINEER.
10. IF NECESSARY, REMOVE THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES THAT MAY INTERFERE WITH THE CLEANING, INSPECTION, AND REHABILITATION OF THE VENTURI FLOW METER.
11. DEWATER, CLEAN, AND PERFORM CCTV INSPECTION OF THE VENTURI FLOW METER. NOTIFY ENGINEER 48–HOURS PRIOR TO COMPLETION OF CLEANING OF THE VENTURI FLOW METER. PROVIDE CCTV INSPECTION DATA TO ENGINEER WITH 24–HOURS.
12. CONTRACTOR TO PERFORM REHABILITATION OF METER AS DIRECTED BY ENGINEER.
13. PERFORM 3D LASER SCAN INSPECTION OF VENTURI FLOW METER IN COORDINATION WITH THE ENGINEER. PROVIDE 3D LASER SCAN INSPECTION DATA TO ENGINEER.
14. IF NECESSARY, REINSTALL THE EXISTING SATELLITE MONITORING STATION PIPING, EQUIPMENT, AND ACCESSORIES.
15. REINSTATE FLOW IN THE VENTURI FLOW METER BY REMOVAL OF STOP PLANKS AND/OR TEMPORARY FLOW DIVERSION SYSTEM. REMOVE FLOW DIVERSION SYSTEM FROM DOWNSTREAM EXIT OF VENTURI FLOW METER PRIOR TO REMOVAL FROM UPSTREAM ENTRANCE.
16. REPEAT STEPS 7–15 FOR EACH VENTURI FLOW METER.
17. UPON COMPLETION OF STEPS 7–16 FOR THIS SITE LOCATION, REMOVE TEMPORARY FLOW METER FROM MI–040.
18. FURNISH AND INSTALL NEW STOP PLANKS WITHIN THE UPSTREAM ENTRANCE AND DOWNSTREAM EXIT OF THE VENTURI FLOW METER BYPASS PIPE.

JOB # *Contract No. B253*
JOB NAME: *MAIN INTERSEPTOR VENTURI*
CONTRACTOR: *Railroad Construction*

ACTIVITY:
Paterson Venturi (SB Lexington Ave, on Crooks Avenue Exit off RT 20
Calibrate Flowmeter at MH-155
MPT Ramp Closure
Isolate Venturi, Clean / Repair
Rescue Solutions
Build dancefloor D/S & U/S
Install Bulkhead
National Watermain Cleaning
Mclaren Inspection
Construction Concrete Repair
Mclaren Inspection / PFS Scan
Isolate Venturi , Clean / Repair
Rescue Solutions
Install Bulkhead
National Watermain Cleaning
Mclaren Inspection
Construction Concrete Repair
Mclaren Inspection / PFS Scan

October 22, 2025

Second River Yard
Venturi Flow Meters

- Construction Activities - Photos

Second River Yard Venturi Flow Meters

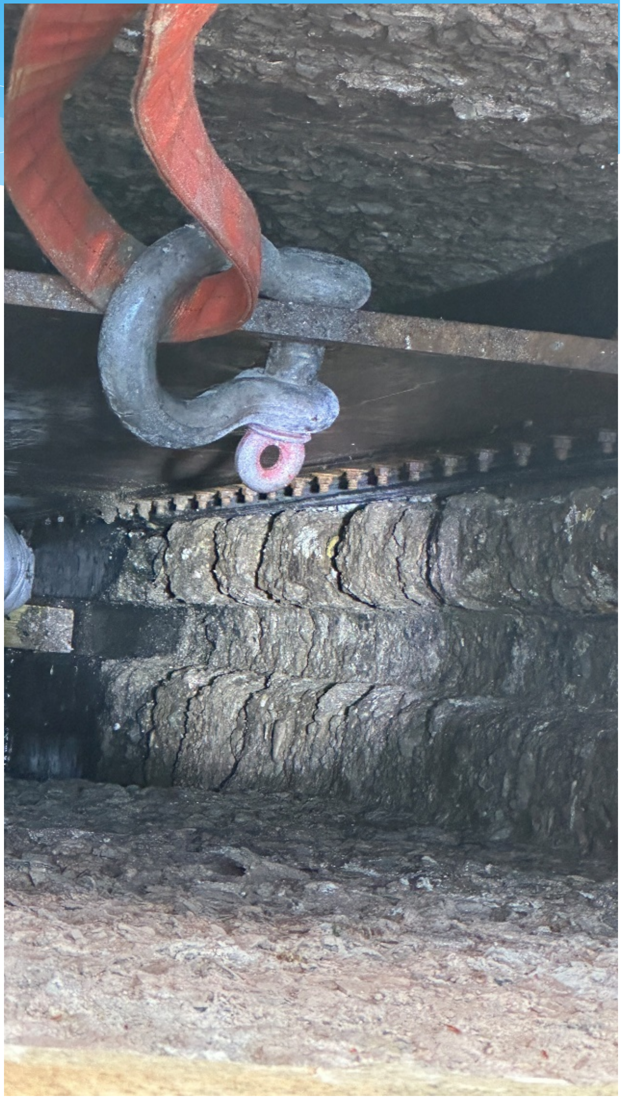
* Construction Activities - Photos

Second River Yard
Venturi Flow Meters

* Construction Activities - Photos

Second River Yard Venturi Flow Meters

* Construction Activities - Photos



Second River Yard Venturi Flow Meters

* Construction Activities –

Photos of Accumulation Of Debris Within Bypass Pipe

Passaic Meter Chamber Venturi Flow Meters

* Construction Activities – Photos

Stop Plates Used to Isolate Venturi Flow Meters

Passaic Meter Chamber Venturi Flow Meters

- Construction Activities – Photos

Passaic Meter Chamber Venturi Flow Meters

- Construction Activities – Photos

Passaic Meter Chamber
Venturi Flow Meters

* Construction Activities – Bypass Pipe Photos

Paterson Meter Chamber
Venturi Flow Meters

* Construction Activities Photos
* Currently work in Progress
* To be continued …….

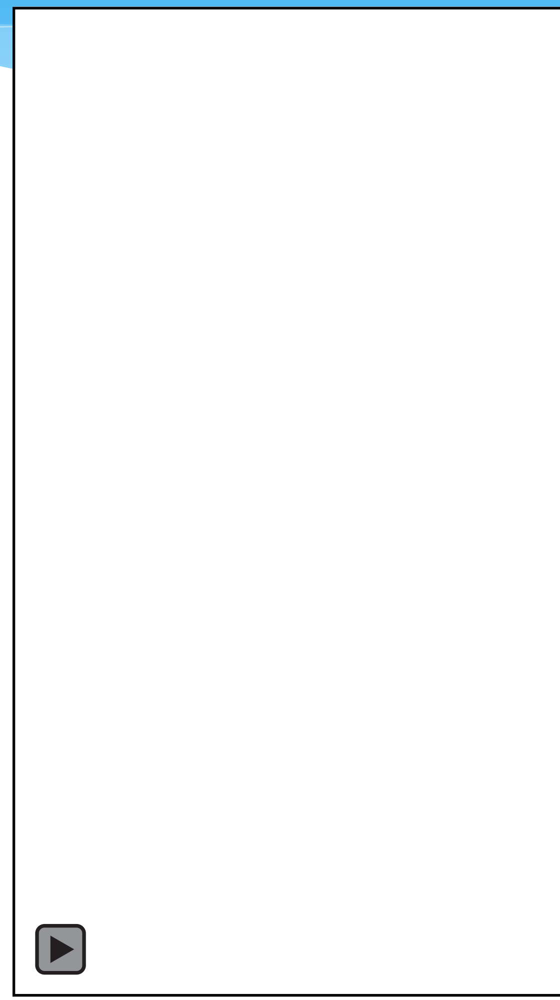
Second River Yard Venturi Flow Meters

* Venturi Flow Meter #1

October 22, 2025

Second River Yard
Venturi Flow Meters

* Venturi Flow Meter #1



October 22, 2025

Second River Yard
Venturi Flow Meters

* Venturi Flow Meter #2

October 22, 2025

Second River Yard
Venturi Flow Meters

* Venturi Flow Meter #3

October 22, 2025

Passaic Meter Chamber Venturi Flow Meters

* Venturi Flow Meter #1

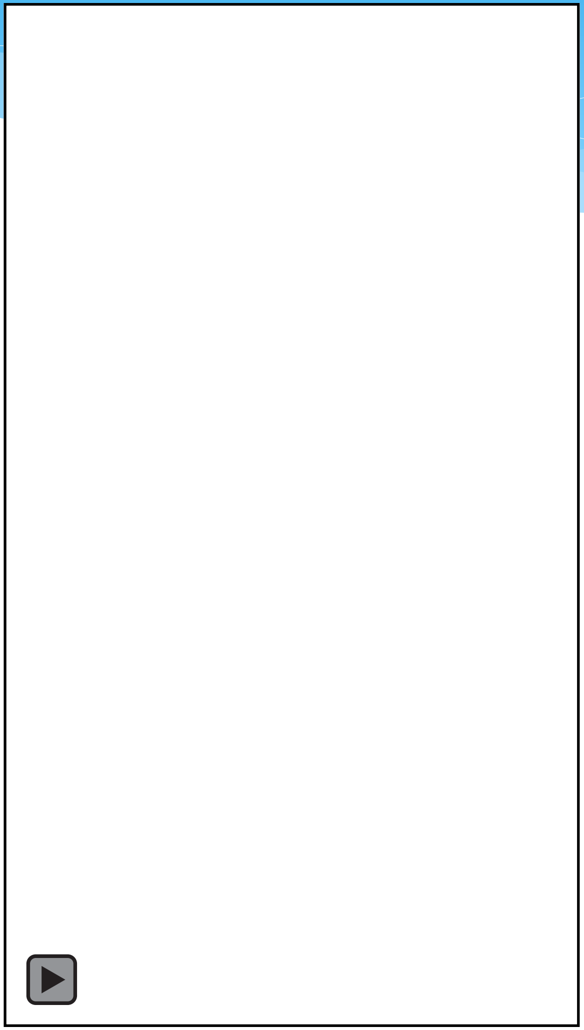
October 22, 2025

Passaic Meter Chamber Venturi Flow Meters

* Venturi Flow Meter #2

Passaic Meter Chamber Venturi Flow Meters

* Venturi Flow Meter #2

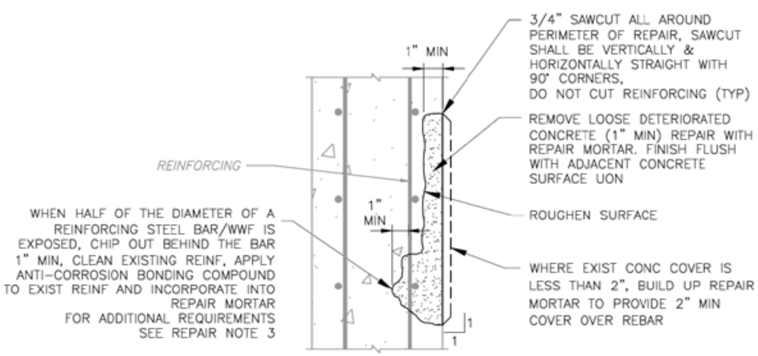


Paterson Meter Chamber
Venturi Flow Meter

* Venturi Flow Meter #1
* Currently work in Progress
* To be continued ……..

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Inspections, Data, Reporting, and Results
  * Structural Inspection (Mclaren)
    * Construction Concrete Repairs
  * Venturi Flow Meters and Bypass Pipes Inspections (Mclaren & PFS)
    * Photographs
    * Scans
    * Model
    * Report Results……..



REPAIR OF SPALLED/SCALLED/DETERIORATED CONCRETE (REPAIR TYPE 'A')
NTS

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* Inspections, Data, Reporting, and Results

October 22, 2025

Contract No. B253B
Main Interceptor Venturi Flow Meters Rehabilitation Project

* THANK YOU !!!

* QUESTIONS ???

Eric Granholm, P.E., ENV SP | Senior Civil Engineer I
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www.nj.gov/pvsc

"Protecting Public Health and the Environment"

October 22, 2025