

Tampa Construction Specifications

RFQ 26-D-00030 Ybor Pumping Station Force Main Repairs Design

CITY OF TAMPA, FLORIDA

Supplemental Information for

RFQ 26-D-00030 Ybor Pumping Station Force Main Repairs Design

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Supplemental information should e-mail [Contractadministration@tampagov.net](mailto:Contractadministration@tampagov.net).

City of Tampa

Contract Administration Department

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Tampa, Florida 33602



## Ybor Force Main Urgent Repairs

# PHASE 2 - LONG-TERM RESOLUTION ALTERNATIVES ANALYSIS

April 10, 2026

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Acronyms	
Table text	
PCCP	Prestressed Concrete Cylinder Pipe
DIP	Ductile Iron Pipe
ARV	Air Release Valve
SCADA	Supervisory Control and Data Acquisition

## 1.0 INTRODUCTION

### 1.1 Background

The Ybor Force Main, designated Division 4F1, was constructed in 1980. This sanitary force main is comprised of 72-inch and 54-inch diameter prestressed concrete cylinder pipe (PCCP). The downstream segment is 54-inch and the upstream segment is 72-inch. A second parallel downstream segment was originally planned, but it is now apparent this segment will not be required.

### 1.2 Problem

In 2025, one of the force main's air release valves (ARV) in 26th Street was found to be leaking. Further investigations revealed the top mounted two-inch diameter threaded outlet in the 72-inch force main was structurally compromised. This threaded outlet is mounted on a reinforcing band attached to the steel cylinder of the PCCP. See Figure 1-1. It is evident that the pipe is deteriorated by common crown corrosion from the accumulation of hydrogen sulfide gas that is reduced to sulfuric acid. The PCCP is embedded cylinder pipe which means the corrosion has progressed through the 1.75 inch thick interior concrete core and reached the steel cylinder. See Figure 1-2. The steel cylinder functions as the waterproof membrane in PCCP since concrete is porous. This deteriorated pipe would not be watertight under elevated pressures. Fortunately, the exterior concrete core is approximately 3.75 inch thick. Optimistically, it will take some additional time for the corrosion to progress through the exterior concrete core before it reaches the prestressing wires. This pipe needs to be permanently replaced, repaired or rehabilitated before corrosion reaches the wires. Historically, corroded prestressed wires result in rather catastrophic rupture failures in higher pressure applications. Fortunately, this pipe normally operates at much lower pressures of around 10 to 20 psi. During significant storms resulting in higher flows, the City should use due care to avoid operating this force main at higher pressures as much as is practicable until permanent repairs are completed.

#### Typical threaded outlet in embedded cylinder pipe (ECP)

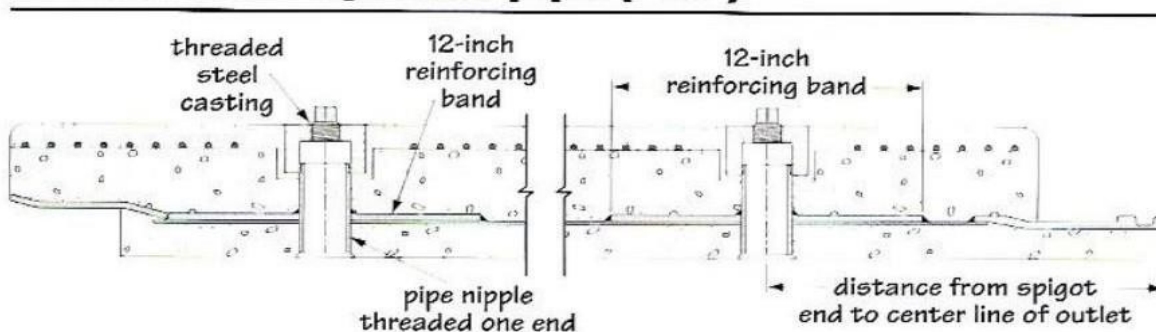


Figure 1-1

## Embedded cylinder pipe (ECP) construction

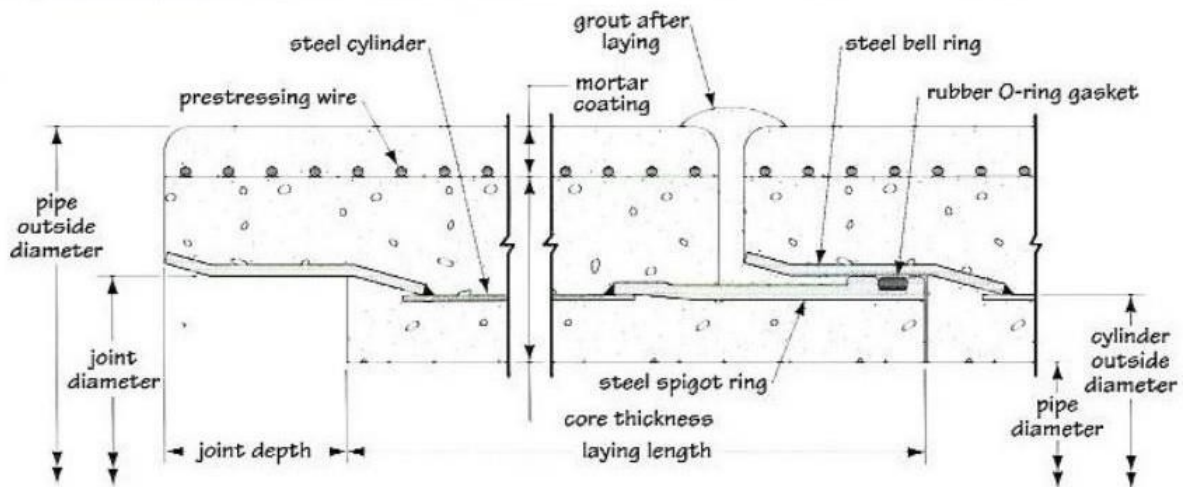


Figure 1-2

The leaking ARV was stopped from leaking by the addition of an outlet saddle over the ARV and the outlet was filled with concrete and capped. This ARV can no longer vent gases which means corrosion will continue to progress. Since the steel cylinder is compromised, adding a new tap to replace the ARV involves seating the outlet saddle gasket on an exposed surface of the corroded cylinder which would likely fail and be very risky to chip away the exterior core to expose the surface of the cylinder.

### 1.3 Scope of Services

Wade Trim has been authorized to provide recommendations to the City for mitigation of this problem. The services are divided into two phases. Phase 1 includes more immediate external strengthening of the most susceptible parts of the force main, While Phase 2 provides recommendations for a long term solution. Phase 1 is addressed separately, while Phase 2 is provided herein.

## 2.0 ALTERNATIVES SOLUTIONS

### 2.1 General

When large diameter pressure pipes have localized failures, it is common to employ line-stops upstream and downstream of the failure in need of repair. If maintaining flow is required, the stops have adjacent hot taps and a bypass around the failure. In the size range for this project, the line stops and hot taps are approximately \$250,000 each just for the specialized sub-contractor and four are required. For this project the length of the level, high portion of pipe, according to design

documents, is 1,090 linear feet. This section of pipe is located just south of Adamo Dr. (SR60) and continues to the railroad tracks north of the Selmon Expressway. It is unfortunate that this segment which is susceptible to gas accumulation and crown corrosion, along 26<sup>th</sup> Street, is so long. 26<sup>th</sup> Street is a City of Tampa right-of-way. There is a likelihood that the gas accumulation will be most prevalent in the downstream part, especially at the downturn which is 155 feet downstream of the failed air release valve.

A temporary bypass approximately 42 to 48 inches in diameter could be laid above ground, but there are five important business access driveways that would require sections of buried bypass pipe. Below ground there are significant utilities that will make finding clear corridors difficult.

Three alternative solutions were developed for comparison, evaluation and cost comparison as follows”

- Alternative A – includes diversion of flows from the pump station upstream of the force main so the suspect portion of force main can be isolated and either rehabilitated or replaced.
- Alternative B – includes two linestops, two hot taps and a temporary bypass pipe so that the suspect portion of force main can be rehabilitated or replaced.
- Alternative C - includes two linestops, two hot taps and a permanent buried bypass pipe so that the suspect portion of force main can be abandoned and removed from service.

## 2.2 Alternative A – Flow Diversion to allow Force Main Rehabilitation or Replacement

New facilities will be required to divert normal high flows from Ybor Pump Station estimated at 35 MGD following review of recent SCADA data. A new 36-inch force main would be constructed from Ybor Pump Station approximately 4,205 linear feet east to the intersection of 34<sup>th</sup> Street and 3<sup>rd</sup> Avenue where a hot tapped connection to the City’s existing 48-inch diameter East Tampa Force Main would be constructed. See Figure 2-1 in Appendix A. The route avoids parallel construction in East 4<sup>th</sup> Avenue which is a County Road (CR 574). Two crossings of this county road will likely require trenchless construction. A crossing of the Selmon Expressway Connector occurs where the roadway is elevated thus a trenchless crossing is averted. This facility should allow approximately 22.5 MGD of flow diversion. The East Tampa Force Main base flows are well below planned estimates leaving ample capacity for the diversion flows. Hydraulic analysis will be needed to determine if the existing station pumps can be used or if bypass pumps are needed

In addition, the City currently has an existing 36-inch reinforced concrete pipe (RCP) gravity sanitary sewer that allows excess flows in the Main Outlet sewer to overflow into Ybor PS. With some structure modifications, this connection could be modified to allow flow in the opposite direction under low pressures. Using this existing facility averts the need for a connection to the Main Outlet Sewer located in the median of Adamo Drive (State Road 60) This facility should allow approximately 12.5 MGD of flow diversion. See Figure 2-1 in Appendix A.

Basic hydraulic calculations suggest both the East Tampa Force Main and the Main Outlet sewer can accept these additional flows during normal high flow periods. See Table 2-1. More detailed hydraulic calculations and review of historic SCADA information should be performed if this alternative progresses to the final design stage.

Conceptual Level Hydraulics										
Segment	Length (ft)	I.D. (in.)	New Flow (MGD)	Base Flow (MGD)	Total Flow (MGD)	Velocity (fps)	Headloss (ft)	Friction Loss (psi)	Coefficient	
Ybor PS to M.O.	400	30	12.50	0.00	12.50	3.94	0.73	0.31	120	
M.O. to JC#1	18,000	48	12.50	9.00	21.50	2.65	Gravity Flow Slope=0.07'/100'	0.013	Full Flow Cap.=24.5 MGD OK, 3.0 MGD to spare	
Ybor PS to ETFM	4205	36	22.5	0	22.50	4.93	9.32	4.04	120	
Remainder of ETFM	16,500	48	22.50	10.00	32.50	4.00	<u>17.79</u>	<u>7.71</u>	120	
						Total	27.11	11.75		
Bypass	1,120	48	35		35.00	4.31	1.39	0.60	120	

Table 2-1

Once in place, these diversion facilities will allow the existing 72-inch force main to be removed from service to allow either replacement or rehabilitation. The most cost effective rehabilitation technique would be to slip line the 72-inch inside diameter PCCP with 54-inch diameter high density polyethylene pipe. This pipe could be iron pipe size DR 26, 80 psi, inside diameter of 49.6” and a wall thickness of 2.08” or DR 21, 100 psi inside diameter of 48.55” and a wall thickness of 2.57”, Grouting the annulus is imperative. Fortunately, the long, level section of pipe is favorable for inserting the liner pipe. Insertion pits would be required at each end and likely two or three more in between. This rehabilitation could be performed significantly more quickly than removal and replacement. It also avoids disrupting the five critical business access driveways.

There is a discrepancy in the 72-inch PCCP record drawings on the south side of Adamo Drive (State Road 60). The plan view shows casing pipe but the profile does not and includes vertical points of deflection which are very difficult to encase. The record drawings state that the information is incomplete. A thorough sub-surface utility investigation will be required here before final design. This investigation is also required for the other alternatives

Perhaps most importantly, the aforementioned proposed diversion facilities are not a sunk cost. These facilities could be available long after this project is completed, providing more flexibility and resiliency for the next challenges or hurricanes. This alternative avoids the cost and risks associated with 72-inch diameter hot taps and linestops potentially on corroded pipe. There is a risk that extreme weather conditions could occur during implementation of this project which could overwhelm the diversion capacity resulting in a sanitary sewer overflow. It is recommended that construction should occur during the dry season (December to June).

## 2.3 Alternative B – Hot Taps, Line Stops and Temporary Bypass Pipe

A pair of hot taps and line stops would be required just south of Adamo Drive (State Road 60). Another pair would be required just north of the active CSX railroad on the north side of the Selmon Expressway. See Figure 2-2 in Appendix A. Fortunately, the right-of-way is City and not County or State. The line stop and hot taps near the CSX railway will be required on pipe that according to design documents is sloped at 4.25 degrees. This slope is not ideal for vertical oriented line stops, but acceptable. To mitigate the risk of inadequate sealing due to potential corrosion, final design should include detailed pipe condition verification and evaluate the use of a horizontal line stop configuration to limit the seal to a known, sound section of pipe.

As mentioned in the preceding section of this report, sub-surface utility investigations will be required to properly locate the line stop and hot tap just south of Adamo Drive. A temporary alignment of the 42 or 48-inch bypass pipe could utilize sidewalk along the west side of the road as the roadway pavement is underlain with numerous utilities. Some sections of bypass pipe may require bury to maintain access to businesses. Business accesses on the west side include two driveways to IKEA. Business accesses on the east side include three or four driveways to I Storage, cruise parking and an Industrial office building with multiple tenants.

The time required to perform this option is difficult to predict accurately since the suspect pipe must be replaced or repaired. Again, it is our opinion that slip lining would be faster and less costly than replacement with 54-inch pipe such as ceramic epoxy lined ductile iron pipe (DIP). Transition from PCCP to slip line pipe (54-inch HDPE) will require long lead time PCCP adaptor fittings/reducers, but are not particularly difficult to construct.

## 2.4 Alternative C - Hot Taps, Line Stops and Permanent Bypass Pipe

As with Alternate B, A pair of hot taps and line stops would be required just south of Adamo Drive (State Road 60). Another pair would be required just north of the active CSX railroad on the north side of the Selmon Expressway. See Figure 2-3 in Appendix A. Ideally a rigorous utility investigation and careful pipe alignment design could produce a corridor for the buried, permanent 48 or 54-inch bypass pipe without requiring excessive relocations of existing parallel utilities including drainage, up to 15-inch sanitary sewers, telephone cables, and power poles with mostly aerial wires. Crossing utilities include gas and buried electrical transmission (two at 66 KV). Minimizing business disruption will likely require some trenchless construction. New easements are not recommended.

## 3.0 RECOMMENDATIONS

### 3.1 Comparative Costs

Without significant effort to advance design past the conceptual stage, it is difficult to prepare accurate project cost estimates that include administration, engineering, construction and regulatory

fees, It is, however, less difficult to prepare valuable comparative costs. Larger quantities cost more than smaller quantities. Likewise large pipe, appurtenances and valves cost more than smaller ones.. Comparative costs are valuable to select the best alternatives. Other non-cost criteria are also important including safety, public inconvenience, business disruption, duration and especially risk. See Appendix B for breakdown of costs which are summarized in the following table.

Alternative	Comparable Cost
A	\$ 6,898,000
B	\$ 5,801,000
C	\$ 5,414,000

### 3.2 Project Duration

If the City proposes progressive design-build to accomplish this project, Alternative A is estimated to take 28 months to complete. This includes 5 months for firm selection and authorization, 10 months for design and permitting, 3 months for procurement, 5 months of diversion facilities construction, 5 months for slip lining and connections.

Likewise Alternative B is estimated to take 26 months to complete. This includes 5 months for firm selection and authorization, 4 months for design and permitting, 6 months for procurement, 6 months of bypass pipe, hot taps and line stops construction, and 5 months for slip lining and connections.

Alternative C is estimated to take 25 months to complete. This includes 5 months for firm selection and authorization, 8 months for design and permitting, 6 months for procurement, 6 months of permanent bypass pipe construction and simultaneous hot taps and line stops construction, The duration of abandonment activities is less important since the threat of a failure will have been eliminated.

In summary the estimated duration of project execution does not significantly impact alternative selection. The alternative with the shortest estimated duration also takes the longest to place the damaged section of pipe out of service.

### 3.3 Final Recommendation

Summaries of the advantages and disadvantages for each Alternative follow:

Alternative A

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Avoids costs and risks associated with 72-inch hot taps and line stops</li> <li>• Avoids risks associated with line stopping potentially corroded pipe.</li> <li>• Diversion facilities would remain operational for future flexibility and resiliency.</li> <li>• Rehabilitation with slip lining results in a segment which is inert to corrosion</li> </ul>	<ul style="list-style-type: none"> <li>• Highest Comparable Cost at \$6,898,000</li> <li>• Includes the risk of extreme weather events overwhelming diversion capacities possibly resulting in overflows</li> </ul>

Alternative B

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• No significant risk of overwhelming the capacity of the bypass system.</li> <li>• Second Lowest Comparable Cost at \$5,801,000</li> <li>• Rehabilitation with slip lining results in a segment which is inert to corrosion.</li> </ul>	<ul style="list-style-type: none"> <li>• Includes the risk associated with excessive utility conflicts/relocations required at business accesses along 26<sup>th</sup> Street.</li> <li>• Includes risks associated with line stopping potentially corroded pipe</li> </ul>

Alternative C







Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• No risk of overwhelming the capacity of the bypass system.</li> <li>• Lowest Comparable Cost at \$5,414,000</li> <li>• Avoids the need for above ground bypass pipe which is less safe than buried pipe.</li> </ul>	<ul style="list-style-type: none"> <li>• Includes risk associated with excessive utility conflicts/relocations required along 26<sup>th</sup> Street.</li> <li>• Includes risk associated with new pipeline construction parallel to potentially compromised 72-inch pipe while in service.</li> </ul>

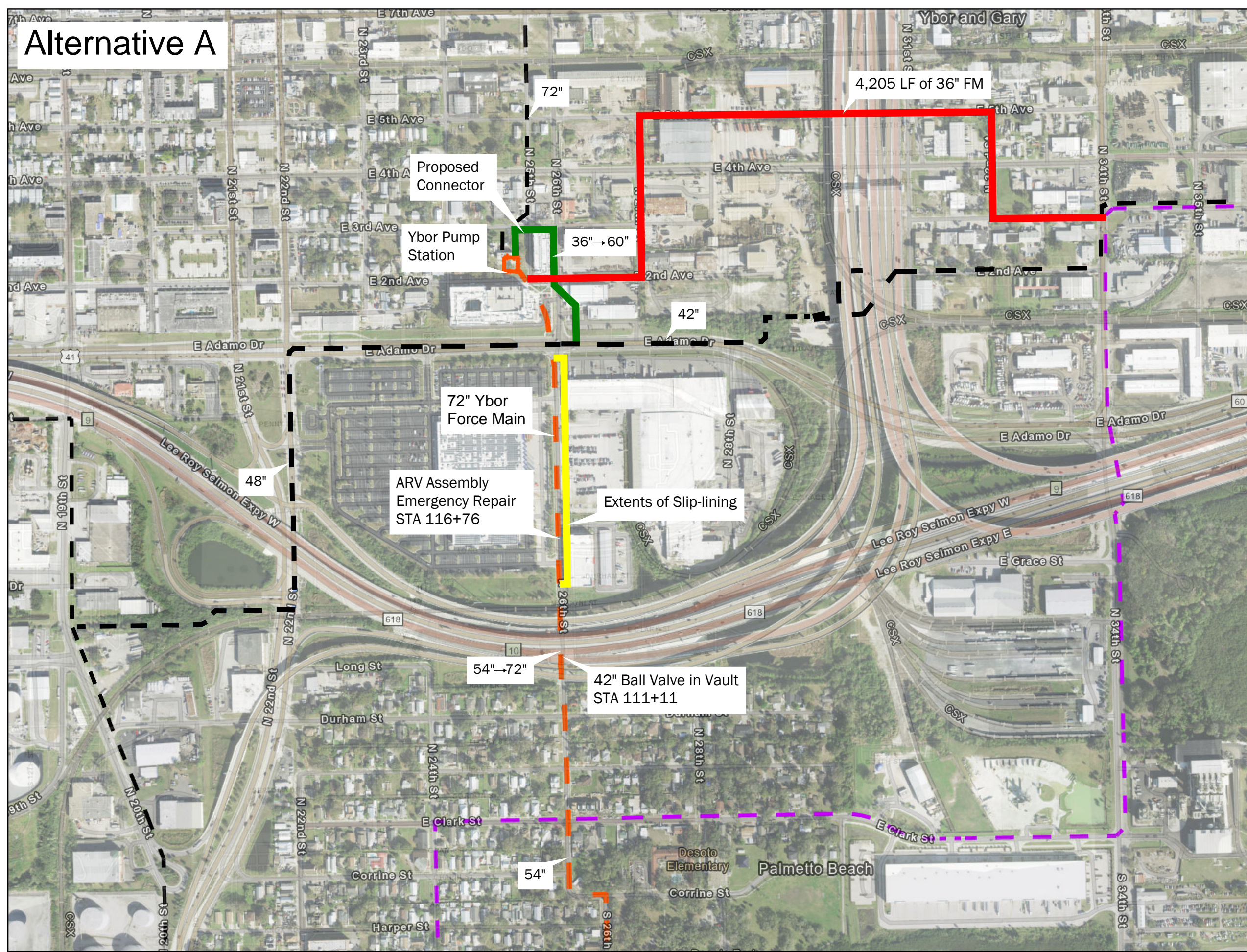
**Appendix A.  
Alternatives A, B and C.**

# Alternative A

January 2026  
TPA201201

## YBOR 72" PCCP FORCE MAIN REPAIR City of Tampa Sewer Mains

- Legend**
-  Gravity Mains
  -  East Tampa Force Main
  -  Ybor Force Main
  -  Proposed 36" FM
  -  Extents of Slip-lining
  -  Proposed Connector



Information provided on this map is accurate to the best of our knowledge and is subject to change on a regular basis and without notice. While Wade Trim makes every effort to provide useful and accurate information, we do not warrant the information to be authoritative, complete, factual, or timely. Information is provided on an "as is" and an "as available" basis.

City of Tampa







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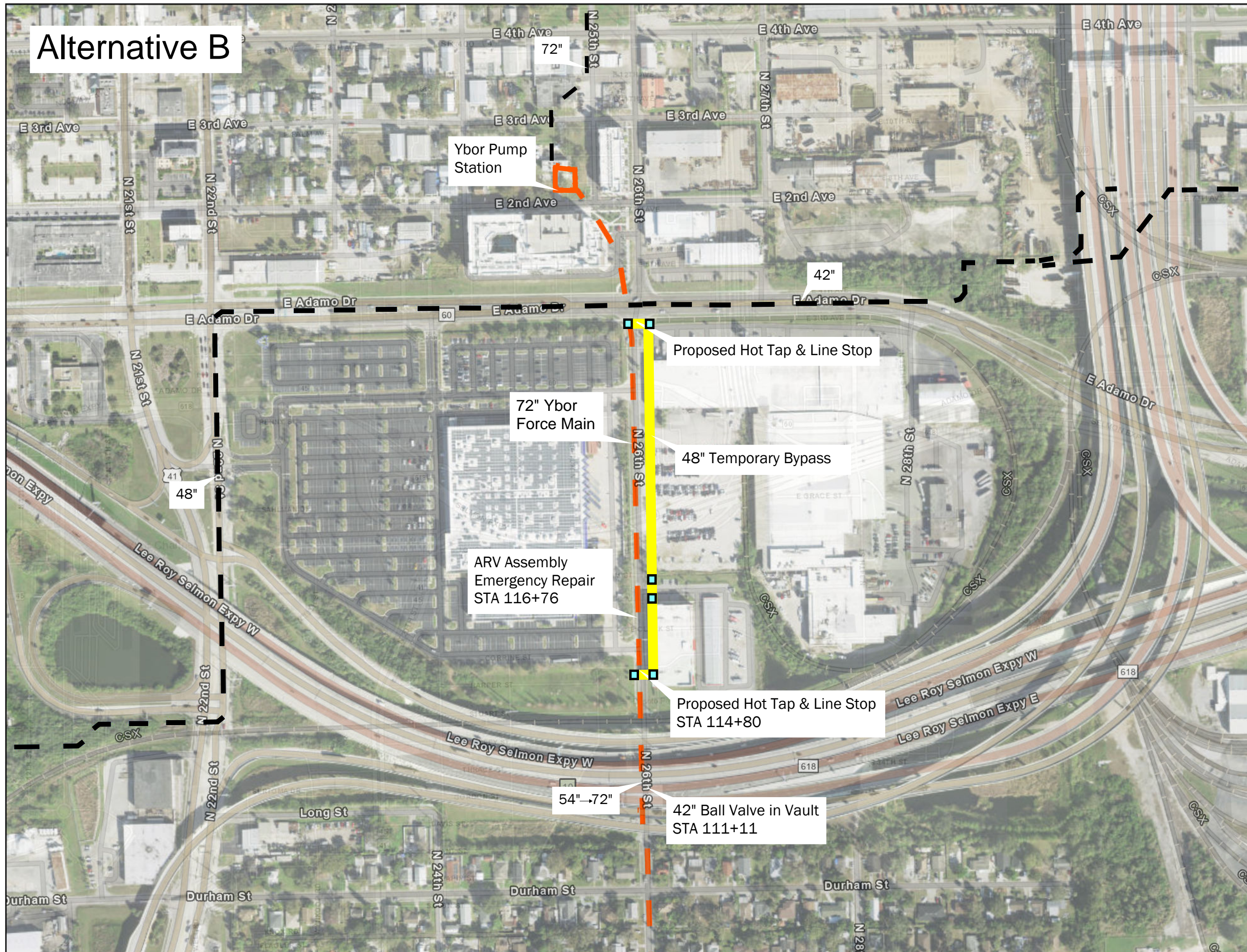
# Alternative B

## YBOR 72" PCCP FORCE MAIN REPAIR

# City of Tampa Sewer Mains

### Legend

-  Gravity Mains
-  Ybor Force Main
-  Proposed 48" Temporary Bypass
-  Jack & Bore Pit Locations



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City of Tampa







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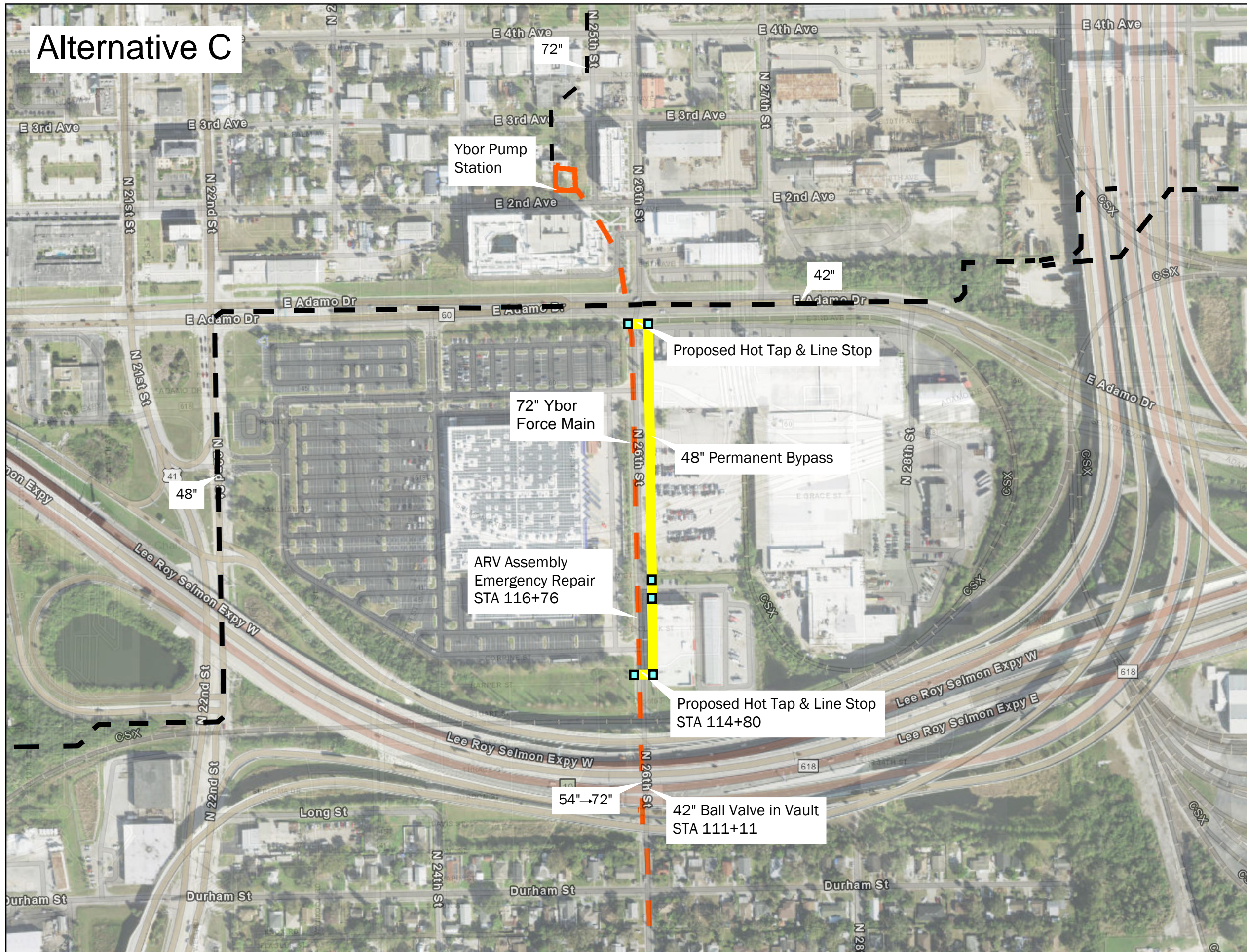
# Alternative C

## YBOR 72" PCCP FORCE MAIN REPAIR

# City of Tampa Sewer Mains

### Legend

-  Gravity Mains
-  Ybor Force Main
-  Proposed 48" Permanent Bypass
-  Jack & Bore Pit Locations



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City of Tampa



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**Appendix B.  
Comparable Cost Breakdowns**

Ybor Force Main Urgent Repairs, Comparative Costs of Alternatives  
 City of Tampa

Alternative A - Divert Flows from PS to Main Outlet Sewer and East  
 Tampa FM, Thence Slip Line Existing 72" Deteriorated FM

	UNIT	QTY	UNIT PRICE	TOTAL
Mobilization (5%)	LS	1	\$ 256,000	\$ 256,000
Design, Overhead and Profit (30%)	LS	1	\$ 1,533,000	\$ 1,533,000
F&I 36-Inch Force Main and Restoration	LF	4,085	\$ 660	\$ 2,696,100
F&I 36-Inch Force Main in 54-inch Casing	LF	120	\$ 2,000	\$ 240,000
Jacking Pits	EA	2	\$ 75,000	\$ 150,000
Receiving Pits	EA	2	\$ 30,000	\$ 60,000
F&I 30-Inch Force Main and Restoration	LF	100	\$ 560	\$ 56,000
36" x 48" Hot Tap Connection to ETFM w/ Tapping Valve	EA	1	\$ 450,000	\$ 450,000
36: FM Valved Connection to Ybor PS	EA	1	\$ 80,000	\$ 80,000
30: FM Valved Connection to Ybor PS	EA	1	\$ 50,000	\$ 50,000
Structure Mod. And 30" FM Connection to 30" Sewer	EA	1	\$ 75,000	\$ 75,000
Hydraulic Testing	LS	1	\$ 25,000	\$ 25,000
Slipline 72" FM with 54" HDPE	LF	1,120	\$ 600	\$ 672,000
Insertion Pits	EA	5	\$ 65,000	\$ 325,000
Connections 54" HDPE to 72" PCCP	EA	2	\$ 85,000	\$ 170,000
Permitting and Maintenance of Traffic	LS	1	\$ 60,000	\$ 60,000

Total \$ 6,898,100  
**USE \$ 6,898,000**

Ybor Force Main Urgent Repairs, Comparative Costs of Alternatives

City of Tampa

Alternative B - Hot Taps, Line-stops, Temporary Bypass and Slipline Rehabilitation of 72" FM


	UNIT	QTY	UNIT PRICE	TOTAL
Mobilization (5%)	LS	1	\$ 215,000	\$ 215,000
Design, Overhead and Profit (30%)	LS	1	\$ 1,289,000	\$ 1,289,000
F&I Temporary 48-Inch Force Main on Grade	LF	790	\$ 450	\$ 355,500
F&I Temporary 48-Inch Force Main, Buried and Restoration	LF	150	\$ 925	\$ 138,750
F&I 48-Inch Force Main in 60-inch Casing	LF	180	\$ 3,000	\$ 540,000
Jacking Pits	EA	3	\$ 85,000	\$ 255,000
Receiving Pits	EA	3	\$ 35,000	\$ 105,000
Utility Conflicts/Relocations along 26th Street Corridor	EA	1	\$ 40,000	\$ 40,000
42-inch by 72-inch Hot Taps	EA	2	\$ 350,000	\$ 700,000
72-inch Line stops	EA	2	\$ 400,000	\$ 800,000
42-inch tapping valves	EA	2	\$ 65,000	\$ 130,000
Hydraulic Testing	LS	1	\$ 25,000	\$ 25,000
Slipline 72" FM with 54" HDPE	LF	1,120	\$ 600	\$ 672,000
Insertion Pits	EA	5	\$ 65,000	\$ 325,000
Connections 54" HDPE to 72" PCCP	EA	2	\$ 85,000	\$ 170,000
Permitting and Maintenance of Traffic	LS	1	\$ 40,000	\$ 40,000

Total \$ 5,800,250  
**USE \$ 5,801,000**

Ybor Force Main Urgent Repairs, Comparative Costs of Alternatives  
 City of Tampa  
 Alternative C - Hot Taps, Line-stops, and Permanent Bypass

	UNIT	QTY	UNIT PRICE	TOTAL
Mobilization (5%)	LS	1	\$ 201,000	\$ 201,000
Design, Overhead and Profit (30%)	LS	1	\$ 1,203,000	\$ 1,203,000
F&I Permanent 48-Inch Force Main and Restoration	LF	940	\$ 925	\$ 869,500
F&I 48-Inch Force Main in 60-inch Casing	LF	180	\$ 3,000	\$ 540,000
Jacking Pits	EA	3	\$ 85,000	\$ 255,000
Receiving Pits	EA	3	\$ 35,000	\$ 105,000
Utility Conflicts/Relocations along 26th Street Corridor	LS	1	\$ 150,000	\$ 150,000
42-inch by 72-inch Hot Taps	EA	2	\$ 350,000	\$ 700,000
72-inch Line stops	EA	2	\$ 400,000	\$ 800,000
42-inch tapping valves	EA	2	\$ 65,000	\$ 130,000
Hydraulic Testing	LS	1	\$ 25,000	\$ 25,000
Insertion Pits	EA	5	\$ 65,000	\$ 325,000
Permanent Bulkheads in 72-inch PCCP	EA	2	\$ 35,000	\$ 70,000
Permitting and Maintenance of Traffic	LS	1	\$ 40,000	\$ 40,000

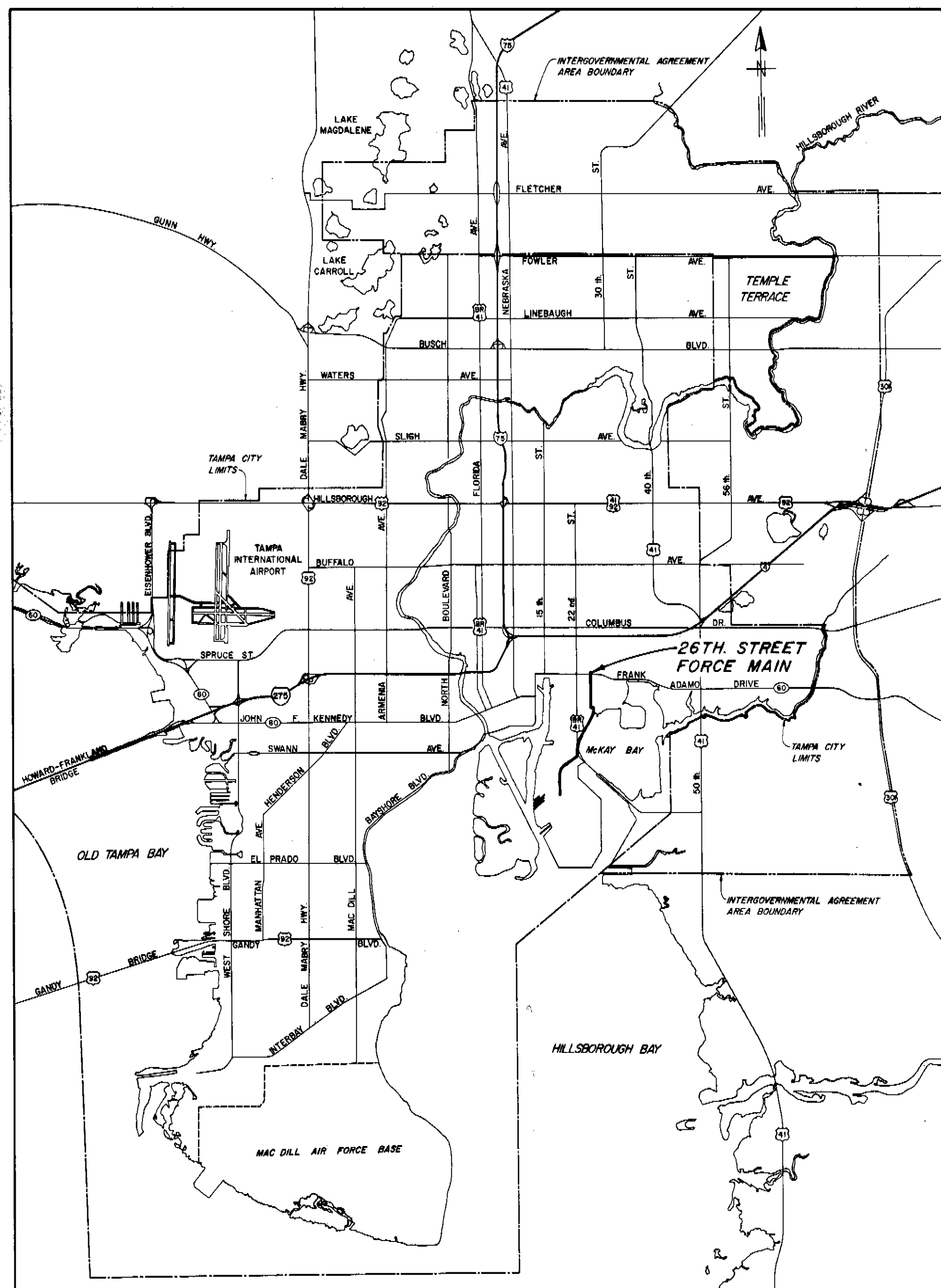
Total \$ 5,413,500  
**USE \$ 5,414,000**



**Appendix C.**  
**Ybor FM As-Built Drawings**

# INDEX

DIVISION 4F1



LOCATION MAP

SHEET	TITLE
1.	LOCATION MAP AND INDEX
2.	INDEX MAP AND LEGEND
3.	PLAN AND PROFILE - STA. 0+231 TO STA. 7+85
4.	PLAN AND PROFILE - STA. 7+85 TO STA. 20+85
5.	PLAN AND PROFILE - STA. 20+85 TO STA. 33+62
6.	PLAN AND PROFILE - STA. 33+62 TO STA. 46+62
7.	PLAN AND PROFILE - STA. 46+62 TO STA. 59+45
8.	PLAN AND PROFILE - STA. 59+45 TO STA. 72+50
9.	PLAN AND PROFILE - STA. 72+50 TO STA. 84+40
10.	PLAN AND PROFILE - STA. 84+40 TO STA. 96+46
11.	PLAN AND PROFILE - STA. 96+38 TO STA. 109+38
12.	PLAN AND PROFILE - STA. 109+38 TO STA. 122+41
13.	PLAN AND PROFILE - STA. 122+41 TO STA. 131+12.8 $\Delta$
14.	VALVE VAULT DETAILS
15.	MISCELLANEOUS DETAILS
16.	$\Delta$ SEWER RELOCATION AND MISCELLANEOUS DETAILS
17.	MISCELLANEOUS STANDARD DETAILS

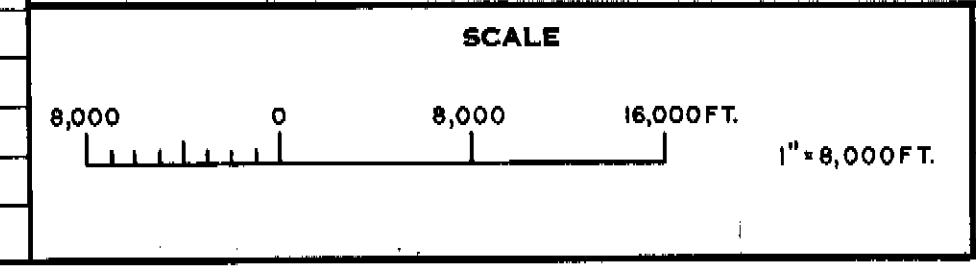
AS BUILT

### GENERAL NOTES

- $\Delta$  1. All elevations are referenced to City of Tampa Datum. To convert to National Ocean Survey Datum, subtract 0.15 feet.
2. Locations, elevations and dimensions of existing utilities, structures and other features are shown according to the best information available at the time of the preparation of these plans but do not purport to be absolutely correct. The Contractor shall verify the locations, elevations and dimensions of all existing utilities, structures and other features affecting his work prior to construction.
- $\Delta$  3. The Contractor shall provide at least 48 hours notice to the various utility companies in order to permit the location of existing underground utilities in advance of construction. The Contractor shall notify the various utility companies by calling the Utility Notification Center (1-800-282-8881) or, if necessary, by contacting the utilities individually.
- $\Delta$  4. Pipe joint openings used to accomplish small deflections shall not exceed a maximum of 1/2 inch.
- $\Delta$  5. Horizontal circular curves shall be made with 16 foot minimum length bevel pipe with open joints as required unless otherwise shown on the plans, specified or directed by the Engineer.



NO.	DATE	APP.	REVISION
$\Delta$ 10/27/80	CJ		As-Built per Inspectors Rpt.
$\Delta$ 4/16/80	TLW		Rev. Sta. 131+28.4 to 131+21.4
$\Delta$ 8/23/77	TLW		Change Sheet Title
$\Delta$ 7/12/77	TLW		Rev. Note 1
$\Delta$ 4/11/76	TLW		Rev. Note 5
$\Delta$ 4/11/76	TLW		Rev. Note 4
$\Delta$ 4/11/76	TLW		Rev. Note 3



**GREELEY AND HANSEN ENGINEERS**  
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CHICAGO, ILLINOIS 60606

DESIGNED T.L.W.  
DRAWN A.A.  
CHECKED T.L.W.

APPROVED  
*Paul E. Langdon, Jr.*  
DATE 1-10-72  
Supt. DEPT. OF SANITARY SEWERS  
STATE OF FLORIDA  
DATE 8-9-73  
GREELEY AND HANSEN, ENGINEERS

CITY OF TAMPA, FLORIDA  
SEWAGE DISPOSAL SYSTEM  
**26TH STREET FORCE MAIN**

DIVISION 4F1  
**LOCATION MAP AND INDEX**

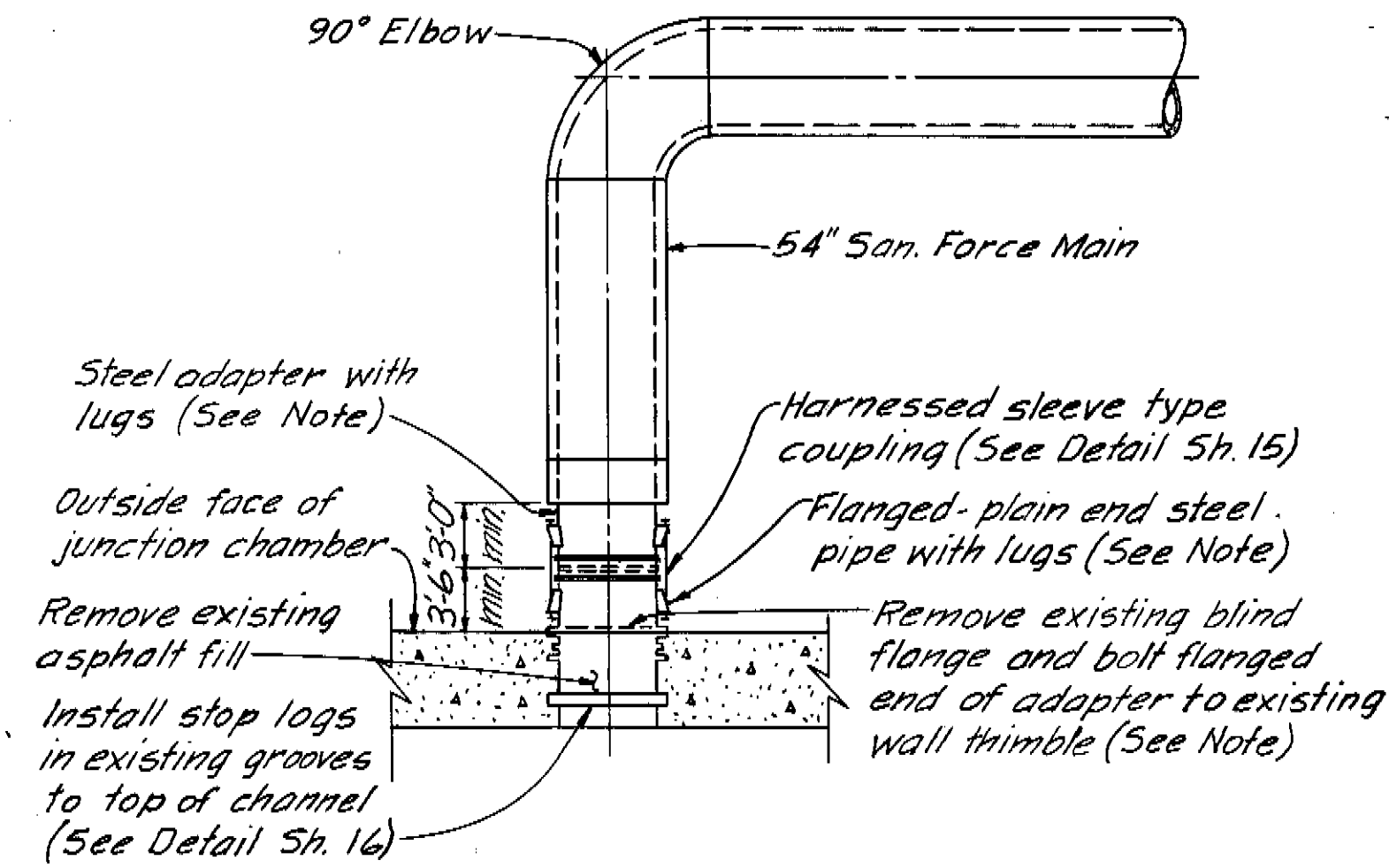
PROJ. NO. S202-70-30D	4F1
SHEET	1 OF 17
DATE	JULY, 1972
REV.	6

156-2

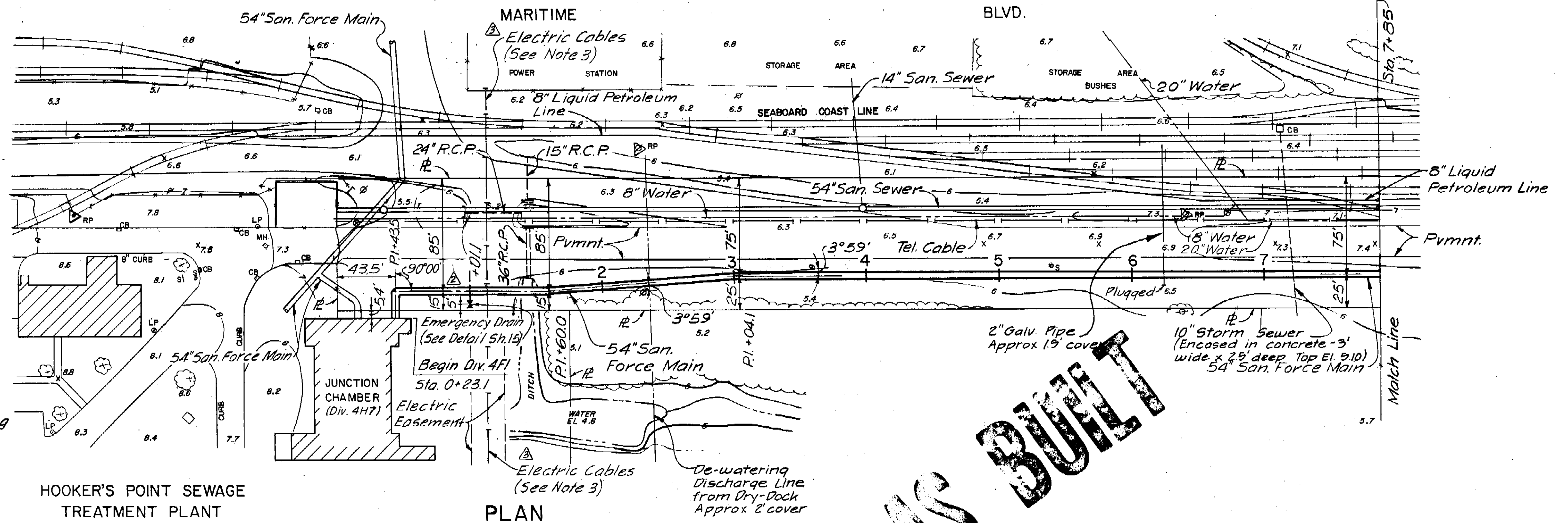


**NOTE:**

Removal of blind flange, installation of steel pipe and fittings connecting to junction chamber shall be made only after entire force main has passed the specified leakage test. Contractor shall furnish and install bulkhead suitable for leakage testing in place of steel adapter until leakage test is complete. Contractor shall obtain and review "As-Built" plans of Div. 4H7 from the Engineer prior to making the connection.



PLAN OF CONNECTION AT STA. 0+23.1  
SCALE: 1/8"=1'-0"

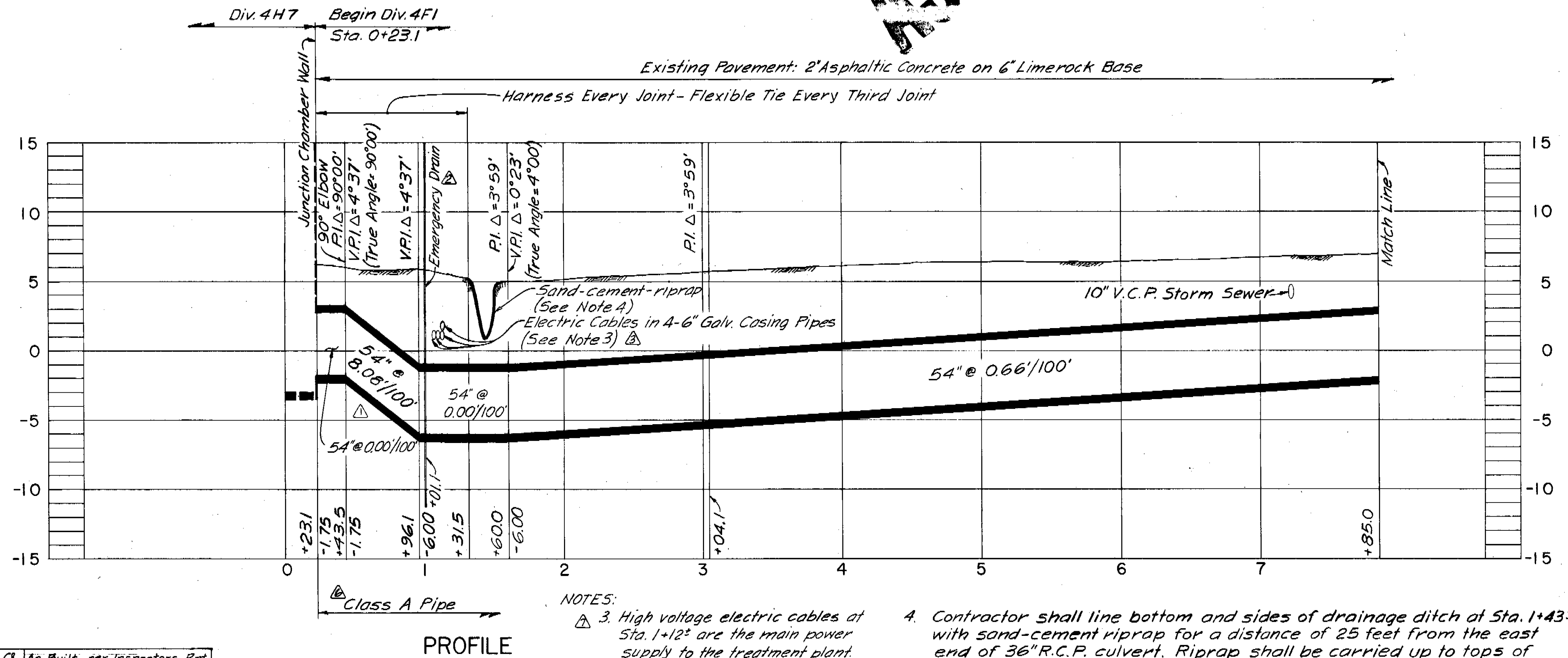


**AS BUILT**

FORCE MAIN PIPE SCHEDULE			
FROM STATION	TO STATION	PIPE DIAMETER	PIPE CLASS
0+23.1	111+11.0	54"	A
111+11.0	112+81.0	72"	B
112+81.0	115+21.0	72"	C
115+21.0	124+78.3	72"	B
124+78.3	128+91.1	72"	C
128+91.1	131+28.4	72"	B

**NOTES:**

- All force main pipe bedding shall be Class B (See Detail Sheet 17).
- All ductile or gray cast-iron pipe shall be encased in polyethylene. Materials requirements and installation procedures for polyethylene encasement shall conform to A.N.S.I. A21.5



**NOTES:**

- High voltage electric cables at Sta. 1+12 are the main power supply to the treatment plant. Contractor shall take all precautions necessary to prevent any damage to these cables.
- Contractor shall line bottom and sides of drainage ditch at Sta. 1+43 with sand-cement riprap for a distance of 25 feet from the east end of 36" R.C.P. culvert. Riprap shall be carried up to tops of ditch banks and shall be constructed in accordance with State Dept. of Transportation Specifications for Road and Bridge Construction.

COMPILED BY PHOTOGRAMMETRIC METHODS  
BY  
**ABRAMS AERIAL SURVEY CORPORATION**  
LANSING, MICHIGAN

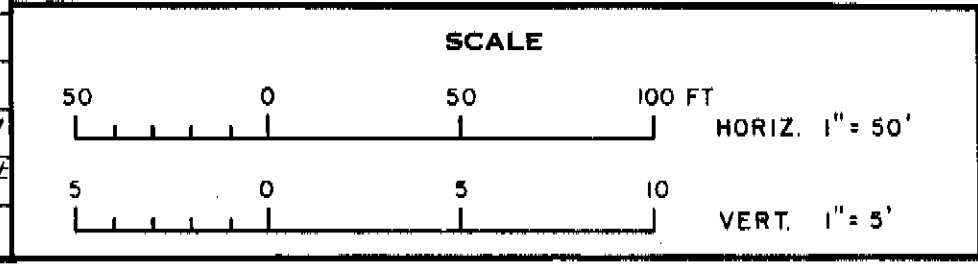
DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971

**GREELEY AND HANSEN ENGINEERS**  
14 E. JACKSON BOULEVARD  
CHICAGO, ILLINOIS 60604

DESIGNED T.L.W.  
DRAWN A.A.  
CHECKED T.L.W.

APPROVED \_\_\_\_\_  
DATE \_\_\_\_\_  
Supt., Dept. of Sanitary Sewers  
GREELEY AND HANSEN, ENGINEERS

NO.	DATE	APP.	REVISION
10/18/80	CS		As-Built per Inspectors Rpt.
8/22/77	TLW		Rev. Connection Detail
8/22/77	TLW		Add Note 3
8/11/77	TLW		Add Pipe Class in Profile
8/11/77	TLW		Rev. Force Main Schedule
8/11/77	TLW		Add Notes 1 & 2
8/11/77	TLW		Add Electric Cable, Sta. 1+12
4/11/76	TLW		Add Emerg. Drain @ Sta. 1+01.1
4/9/74	TLW		Rev. Vert. Align. Sta. 0+23.1 to 1+00.2

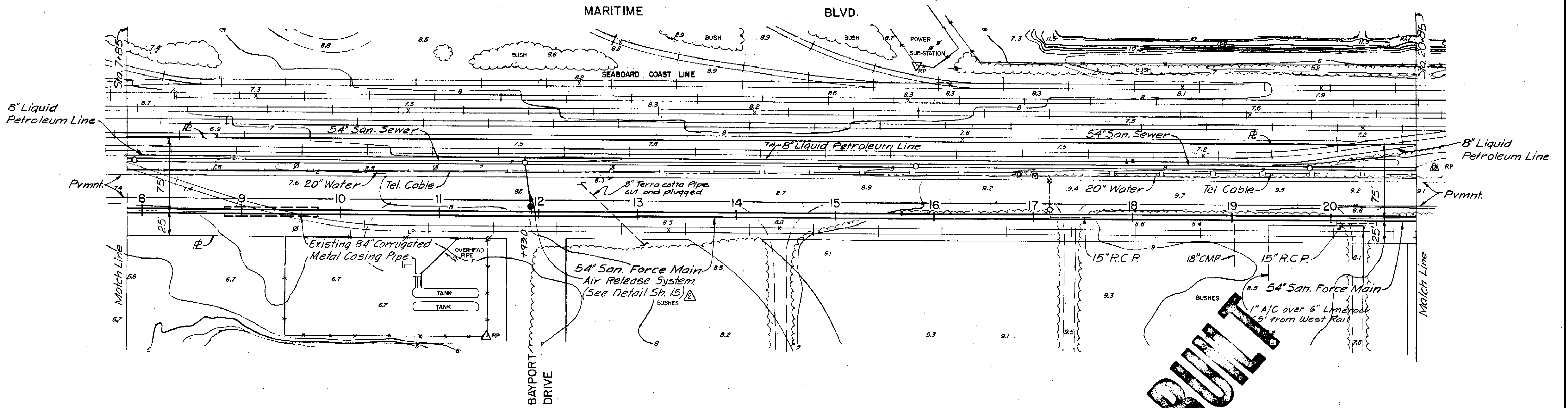


CITY OF TAMPA, FLORIDA  
SEWAGE DISPOSAL SYSTEM  
**26TH STREET FORCE MAIN**

DIVISION 4F1  
**PLAN AND PROFILE**  
STA. 0+23.1 TO STA. 7+85

PROJ. NO. S202-70-300 4F1  
SHEET **3** OF 17  
DATE JULY, 1972    REV: 8

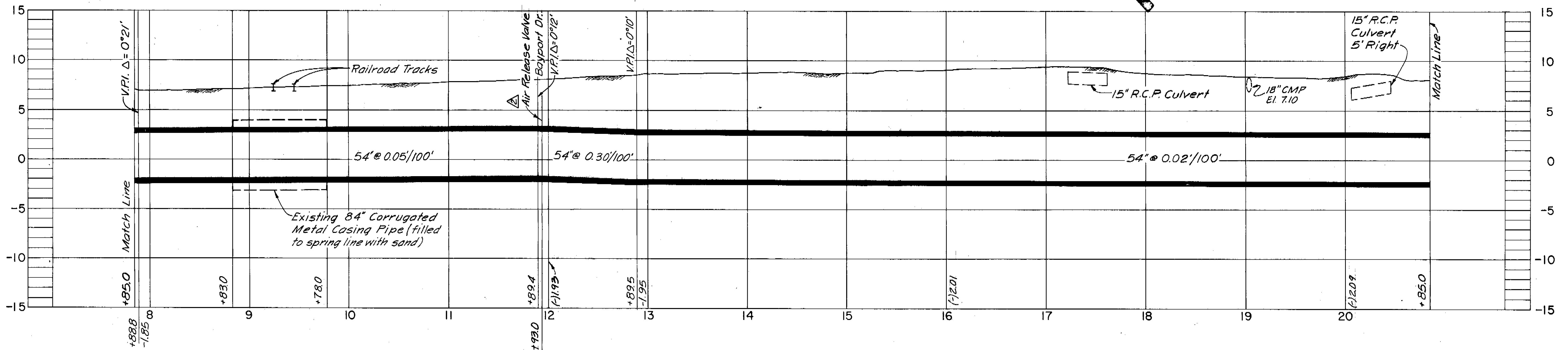
156-4



PLAN

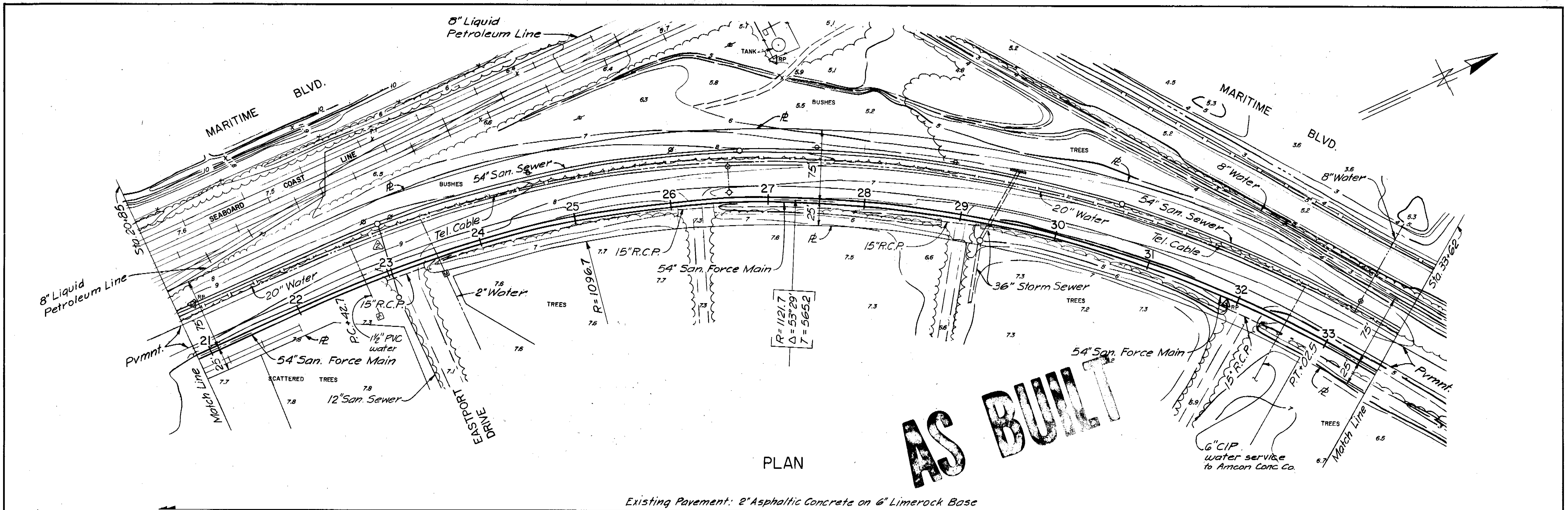
Existing Pavement: 2" Asphaltic Concrete on 6" Limerock Base

**AS BUILT**

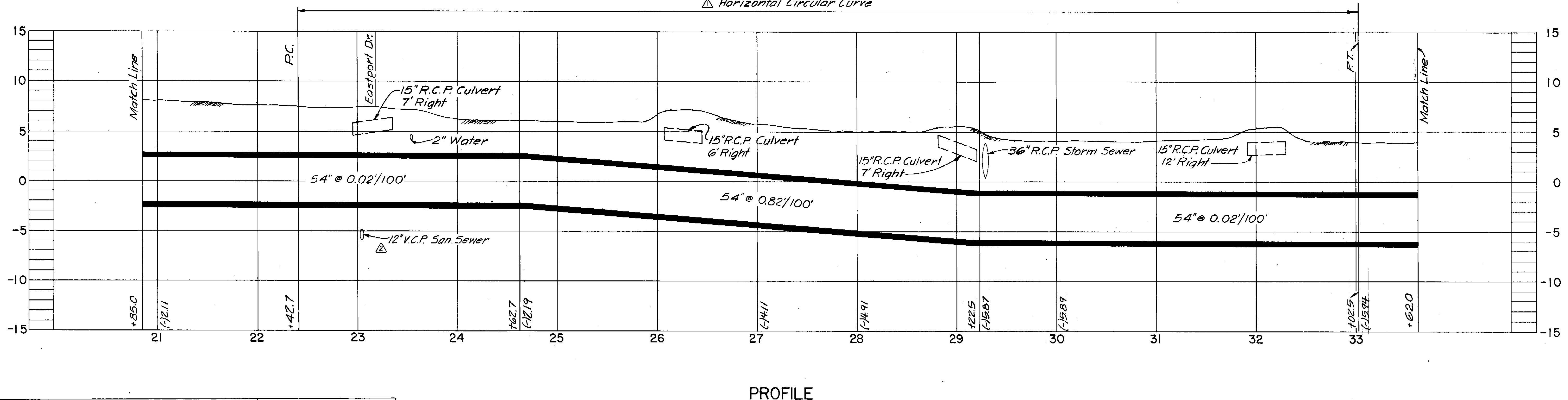


PROFILE

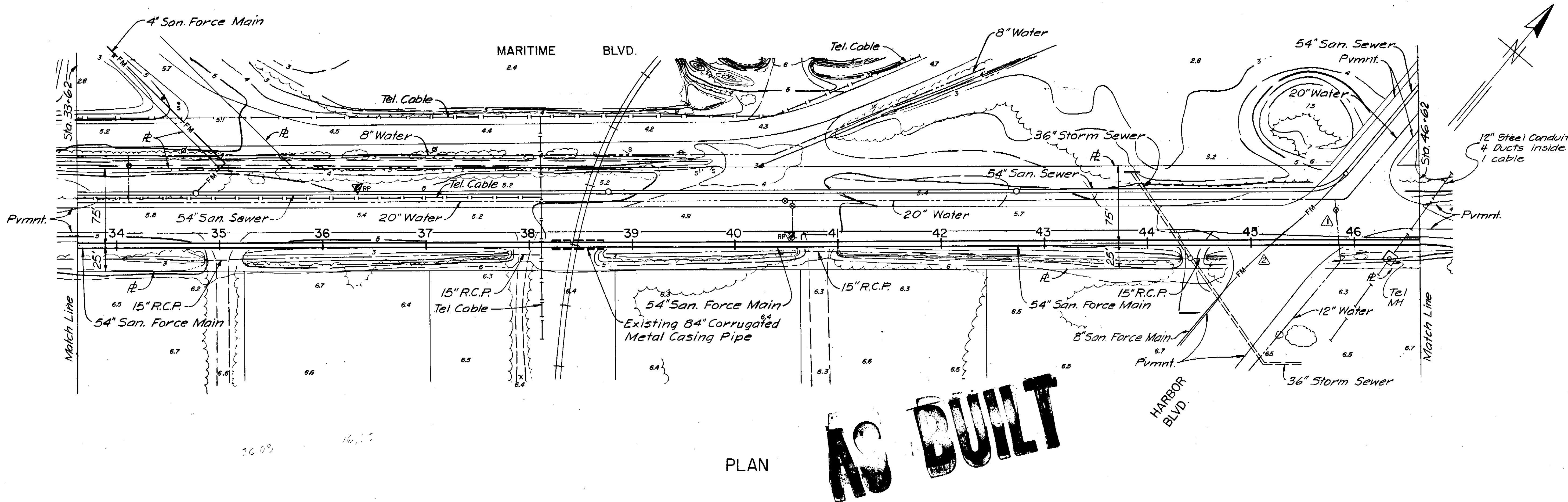
COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.		SCALE 0 50 100 FT HORIZ. 1" = 50' 0 5 10 VERT. 1" = 5'		CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM <b>26 TH STREET FORCE MAIN</b>		DIVISION 4F1 <b>PLAN AND PROFILE</b> STA. 7+85 TO STA 20+85		PROJ. No. S202-70-300    4F1
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604		DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.		APPROVED DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS		NO. DATE APP. REVISION 10/18/80 CB As-Built per Inspectors Rpt 5/11/78 TLW Relocated Air Release System 5/11/78 TLW Rev. Vert. Align Sta. 7+88 to 12+89		SHEET <b>4</b> OF 17 DATE JULY, 1972    REV. 2		156-5



Existing Pavement: 2" Asphaltic Concrete on 6" Limerock Base  
 Δ Horizontal Circular Curve

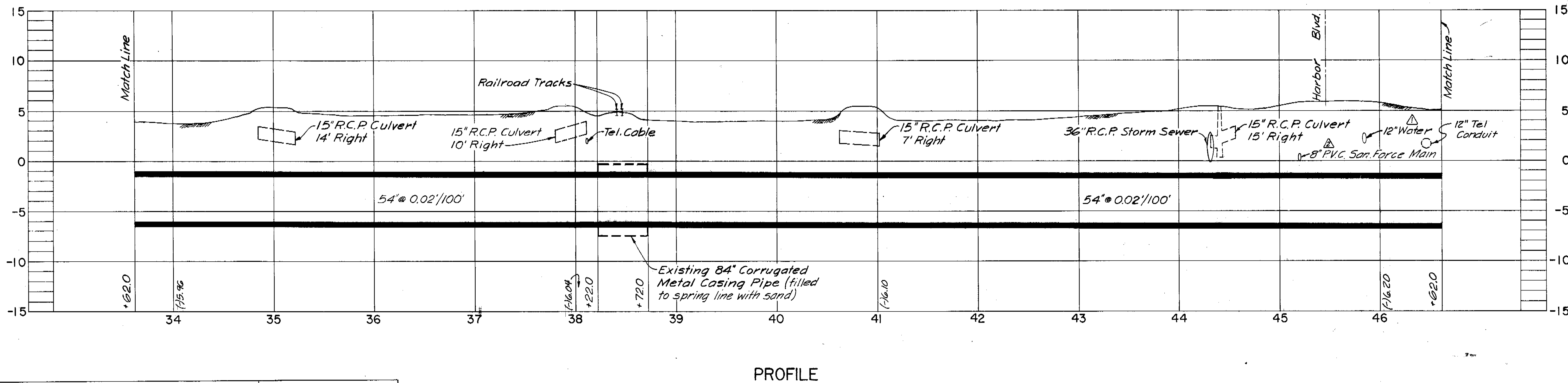


COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		Δ RP REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.		SCALE 50 0 50 100 FT HORIZ. 1" = 50' 5 0 5 10 VERT. 1" = 5'		CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM <b>26TH STREET FORCE MAIN</b>		DIVISION 4F1 <b>PLAN AND PROFILE</b> STA. 20+85 TO STA. 33+62		PROJ. NO. S202-70-30D 4F1 SHEET <b>5</b> OF 17 DATE JULY, 1972    REV. 2	
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604		DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.		APPROVED _____ DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS		NO. DATE APP. REVISION Δ 10/10/80 G.A. As-Built per Inspectors Rpt Δ 8/23/77 T.L.W. Add Exist. Sanitary Sewer Δ 4/11/76 T.L.W. Rev. Horiz. Curve Note		DATE JULY, 1972    REV. 2		156-6	



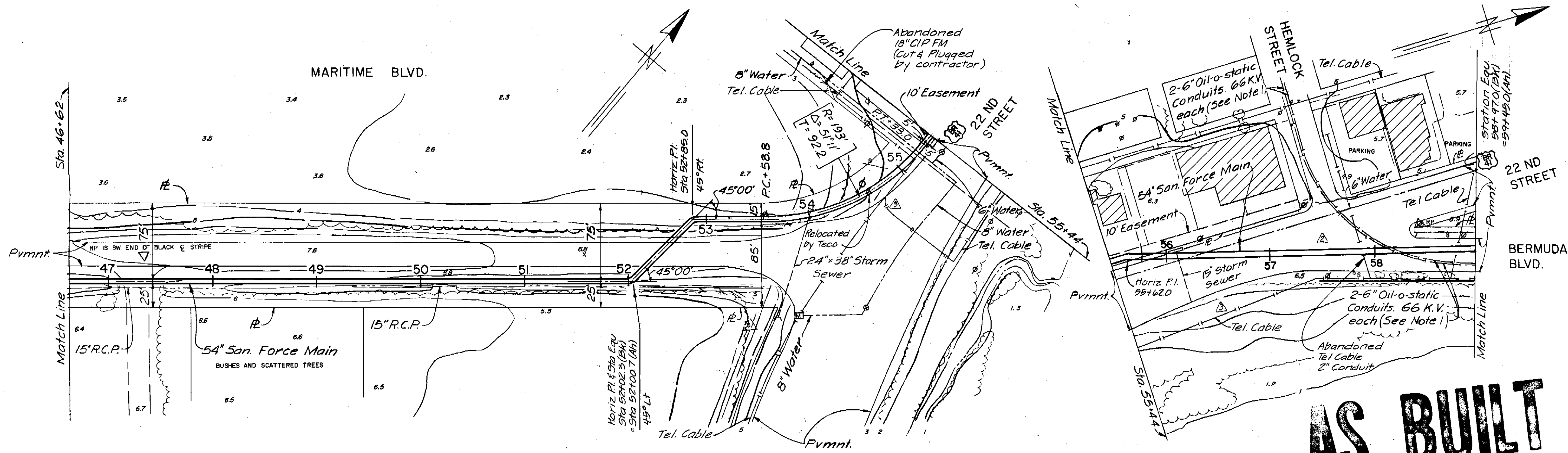
PLAN

Existing Pavement: 2" Asphaltic Concrete on 6" Limerock Base



PROFILE

COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABBRAHS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		△ <sup>RP</sup> REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.	10/6/00    CQ    As-Built per Inspectors Rpt 8/23/77    TLW    Add 8" San Force Main 3/1/74    TLW    Added 12" Water Line	SCALE 50    0    50    100 FT HORIZ. 1" = 50' 5    0    5    10 VERT. 1" = 5'	CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM <b>26TH STREET FORCE MAIN</b>	DIVISION 4F1 <b>PLAN AND PROFILE</b> STA. 33+62 TO STA. 46+62	PROJ. NO. S202-70-30D 4F1 SHEET <b>6</b> OF 17 DATE JULY, 1972    REV. 2
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604	DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.	APPROVED DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS	NO.    DATE    APP.    REVISION				

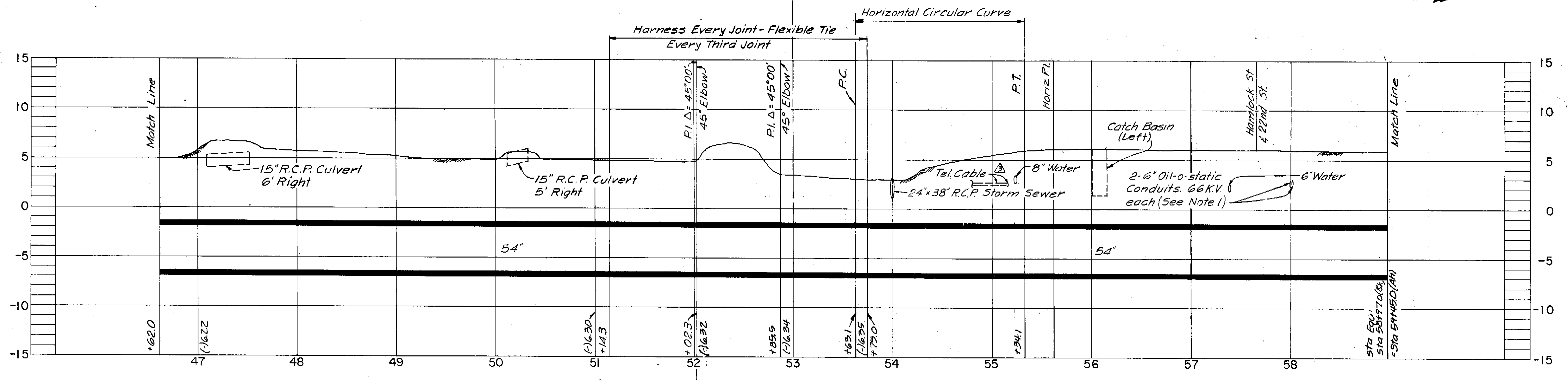


**AS BUILT**

PLAN

Existing Pavement: 2" Asphaltic Concrete on 6" Limerock Base

Existing Pavement: 2" Type I Asphaltic Concrete on 9" Limerock Base



PROFILE

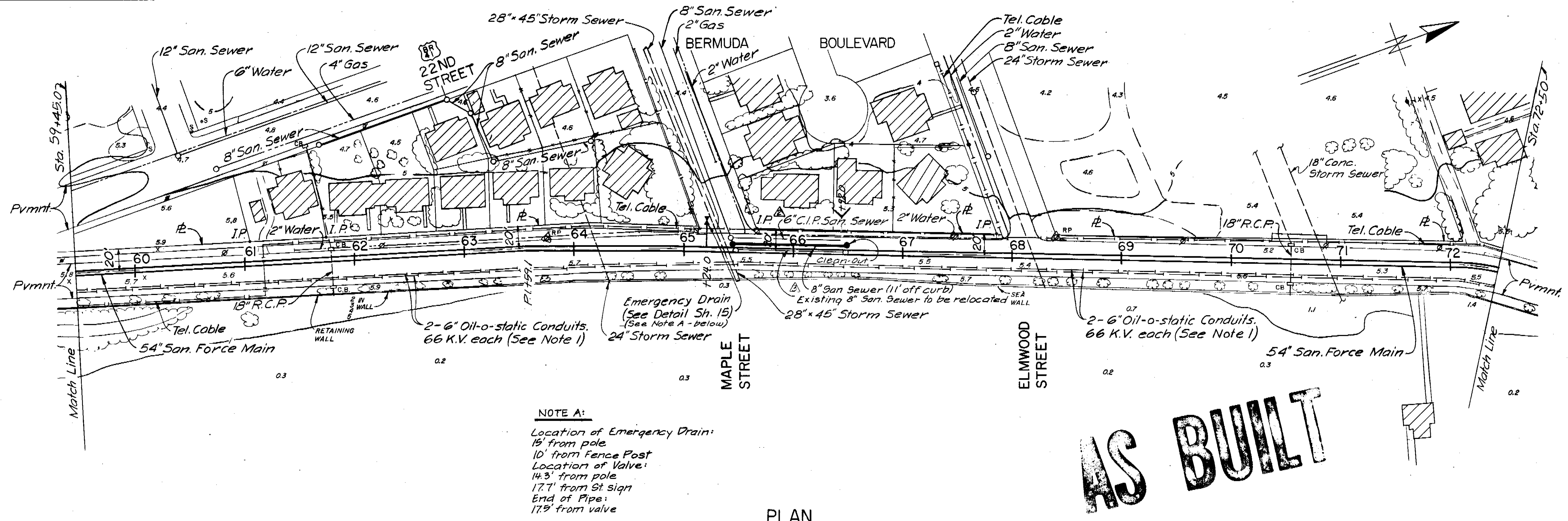
NOTE:  $\Delta$   
 1. Electric conduits filled with oil under pressure. In event of any damage notify Tampa Electric Co. immediately.

COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN		RP REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BENCH TIES DURING CONSTRUCTION.
DATE OF PHOTOGRAPHY OCTOBER 1970 DATE OF MAPPING FEBRUARY 1971	DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.	APPROVED DATE SUPT., DEPT. OF SANITARY SEWERS DATE GREELEY AND HANSEN, ENGINEERS
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604	NO. DATE APP. REVISION 10/18/80 C8 As-Built per Inspectors Rpt 8/18/77 TLW Rev. Utilities Locations at 22nd St 8/19/77 TLW Rev. Horiz. Align. Sta. 57+02.5 to 59+35 10/24/74 TLW Omit Elec. Conduit Encasement	SCALE 0 50 100 FT HORIZ. 1" = 50' 0 5 10 VERT. 1" = 5'

CITY OF TAMPA, FLORIDA  
 SEWAGE DISPOSAL SYSTEM  
 26 TH STREET FORCE MAIN

DIVISION 4F1  
 PLAN AND PROFILE  
 STA. 46+62 TO STA. 59+45

PROJ. NO. S202-70-300 4F1  
 SHEET 7 OF 17  
 DATE JULY, 1972 REV. 3

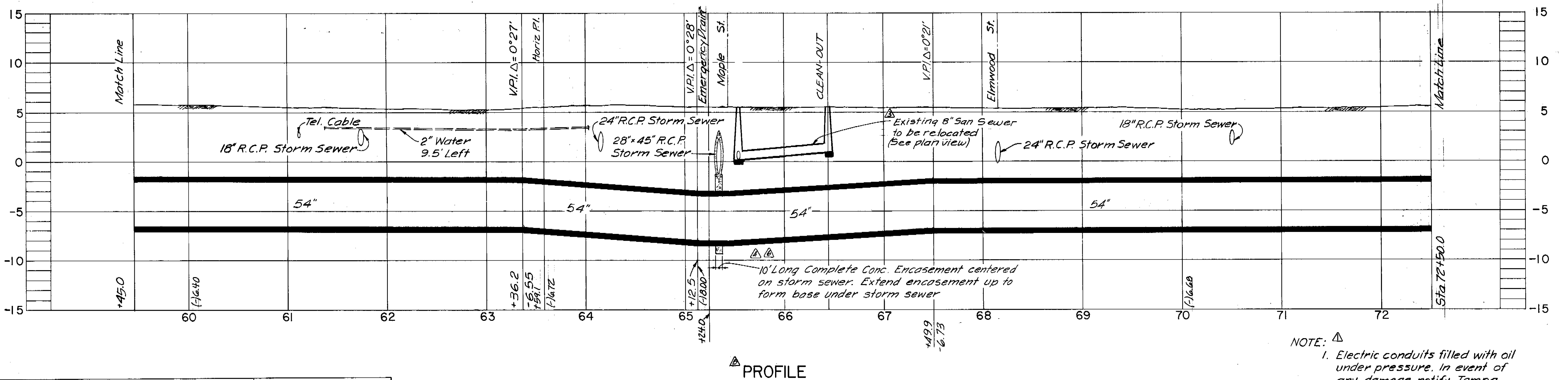


**NOTE A:**  
 Location of Emergency Drain:  
 15' from pole  
 10' from Fence Post  
 Location of Valve:  
 14.3' from pole  
 17.7' from St sign  
 End of Pipe:  
 17.9' from valve

**AS BUILT**

PLAN

Existing Pavement: 3 to 4 Courses of Single Surface Treatment on 6" Limerock Base

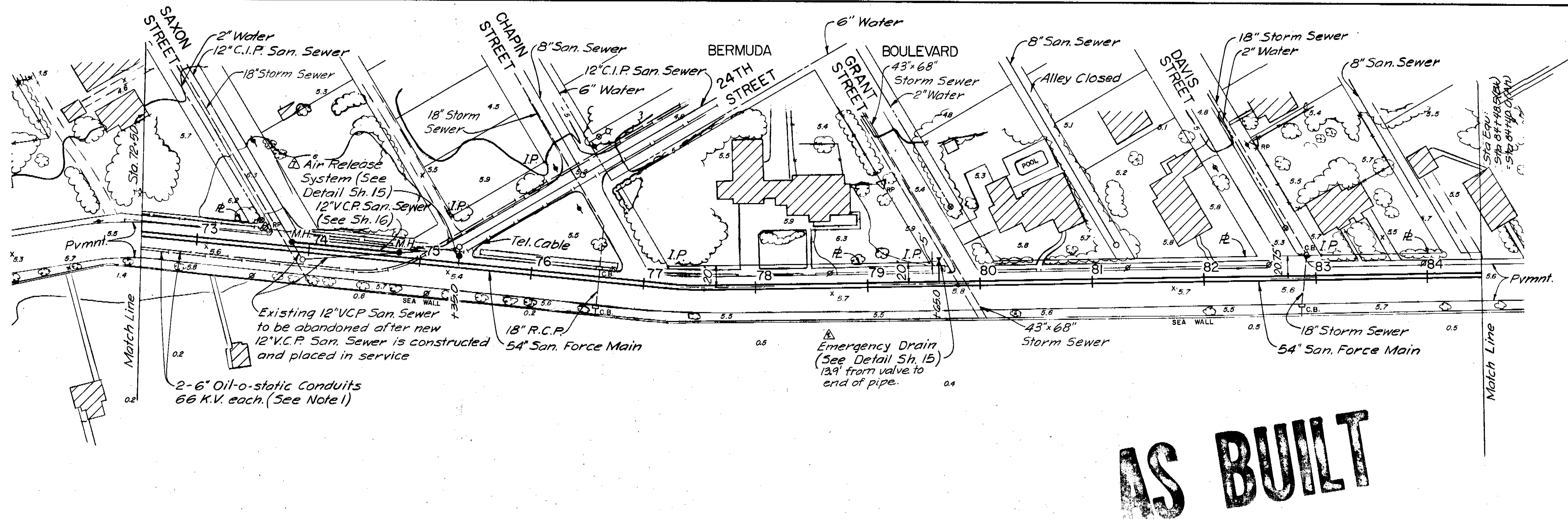


**NOTE:**  $\Delta$   
 1. Electric conduits filled with oil under pressure. In event of any damage notify Tampa Electric Co. immediately.

PROFILE

COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.	<table border="1"> <tr><td><math>\Delta</math></td><td>10/10/80</td><td>CJ</td><td>As-Built per Inspectors Rpt</td></tr> <tr><td><math>\Delta</math></td><td>12/11/77</td><td>TLW</td><td>Rev. Encasement Length</td></tr> <tr><td><math>\Delta</math></td><td>12/11/77</td><td>TLW</td><td>Rev. Vert. Align. Sta. 67+499 to 72+42</td></tr> <tr><td><math>\Delta</math></td><td>9/21/77</td><td>TLW</td><td>Add Conc. Encase. Sta. 65+33</td></tr> <tr><td><math>\Delta</math></td><td>11/12/74</td><td>TLW</td><td>Ex. B' San Sewer Abandoned</td></tr> <tr><td><math>\Delta</math></td><td>11/12/74</td><td>TLW</td><td>Delete Prop. B' San Sewer</td></tr> <tr><td><math>\Delta</math></td><td>10/24/74</td><td>TLW</td><td>Omit Elec. Conduit Encasement</td></tr> <tr><td>NO.</td><td>DATE</td><td>APP.</td><td>REVISION</td></tr> </table>	$\Delta$	10/10/80	CJ	As-Built per Inspectors Rpt	$\Delta$	12/11/77	TLW	Rev. Encasement Length	$\Delta$	12/11/77	TLW	Rev. Vert. Align. Sta. 67+499 to 72+42	$\Delta$	9/21/77	TLW	Add Conc. Encase. Sta. 65+33	$\Delta$	11/12/74	TLW	Ex. B' San Sewer Abandoned	$\Delta$	11/12/74	TLW	Delete Prop. B' San Sewer	$\Delta$	10/24/74	TLW	Omit Elec. Conduit Encasement	NO.	DATE	APP.	REVISION	SCALE 50 0 50 100 FT. HORIZ. 1" = 50' 5 0 5 10 VERT. 1" = 5'	CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM <b>26 TH STREET FORCE MAIN</b>	DIVISION 4FI <b>PLAN AND PROFILE</b> STA. 59+45 TO STA. 72+50	PROJ. NO. S202-70-30D 4FI SHEET <b>8</b> OF 17 DATE JULY, 1972    REV. C
$\Delta$	10/10/80	CJ	As-Built per Inspectors Rpt																																				
$\Delta$	12/11/77	TLW	Rev. Encasement Length																																				
$\Delta$	12/11/77	TLW	Rev. Vert. Align. Sta. 67+499 to 72+42																																				
$\Delta$	9/21/77	TLW	Add Conc. Encase. Sta. 65+33																																				
$\Delta$	11/12/74	TLW	Ex. B' San Sewer Abandoned																																				
$\Delta$	11/12/74	TLW	Delete Prop. B' San Sewer																																				
$\Delta$	10/24/74	TLW	Omit Elec. Conduit Encasement																																				
NO.	DATE	APP.	REVISION																																				
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604	DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.	APPROVED _____ DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS																																					

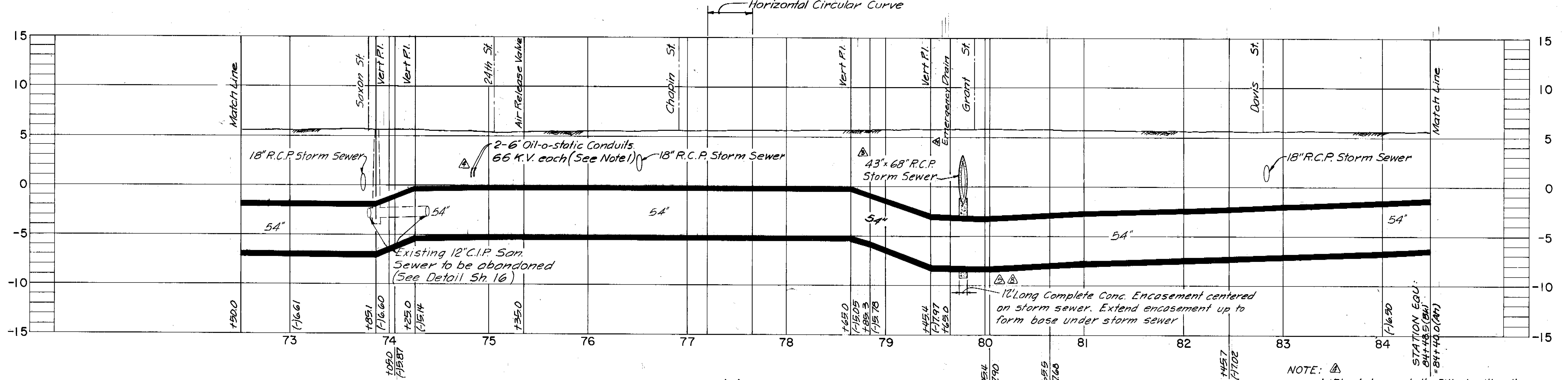
151



**AS BUILT**

PLAN

Existing Pavement: 3 to 4 Courses of Single Surface Treatment on 6\"/>



PROFILE

NOTE:  $\Delta$   
 1. Electric conduits filled with oil under pressure. In event of any damage notify Tampa Electric Co. immediately.

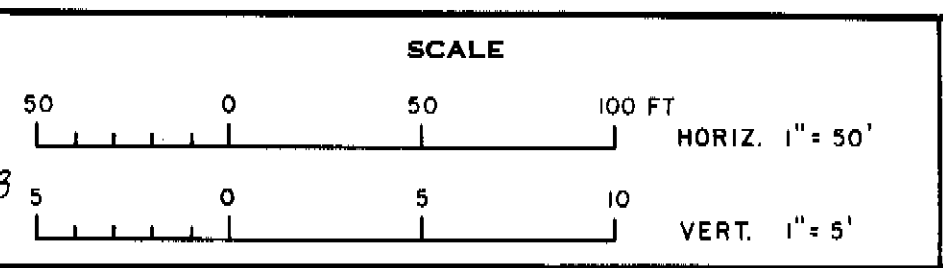
COMPILED BY PHOTOGRAMMETRIC METHODS BY  
**ABRAMS AERIAL SURVEY CORPORATION**  
 LANSING, MICHIGAN  
 DATE OF PHOTOGRAPHY OCTOBER 1970 DATE OF MAPPING FEBRUARY 1971

GREELEY AND HANSEN ENGINEERS  
 14 E. JACKSON BOULEVARD  
 CHICAGO, ILLINOIS 60604

DESIGNED T.L.W.  
 DRAWN A.A.  
 CHECKED T.L.W.

APPROVED \_\_\_\_\_  
 Supt., Dept. of Sanitary Sewers  
 DATE \_\_\_\_\_  
 GREELEY AND HANSEN, ENGINEERS

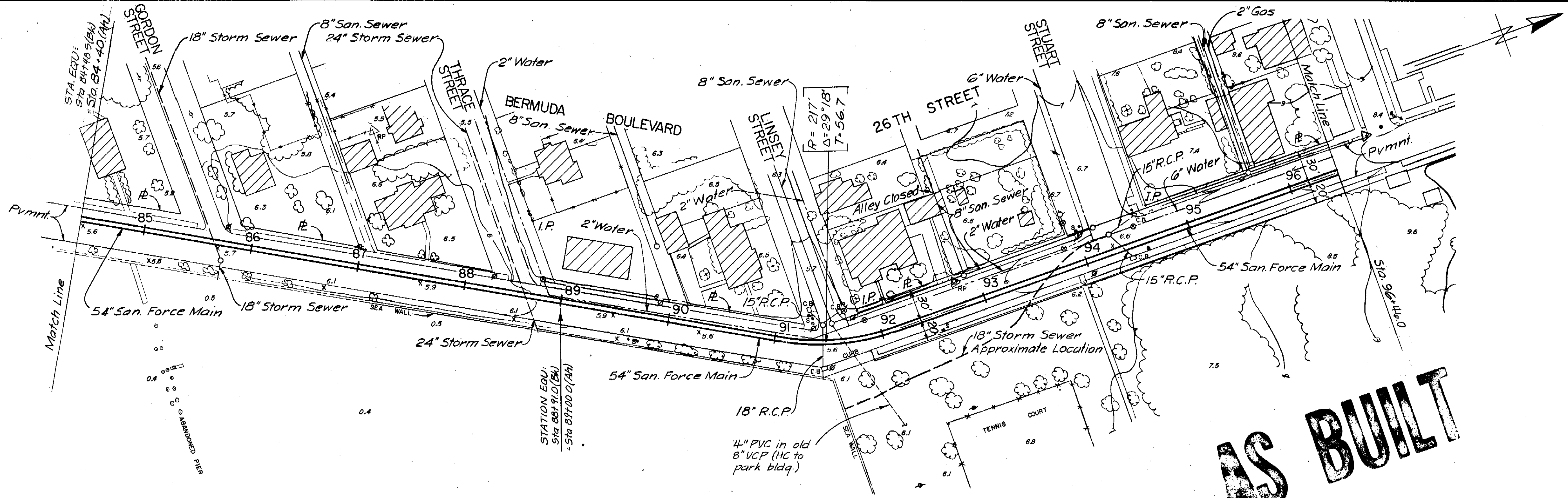
NO.	DATE	APP.	REVISION
$\Delta$ 10/16/80	C4		As-Built per Inspectors Rpt.
$\Delta$ 12/1/77	TLW		Rev. Encasement Length
$\Delta$ 12/1/77	TLW		Relocate Air Release System
$\Delta$ 12/1/77	TLW		Rev. Vert. Align. Sta. 72+40.0 to 79+72
$\Delta$ 9/22/77	TLW		Add Conc. Encase. Sta. 79+78.2
$\Delta$ 10/24/74	TLW		Omit Elec. Conduit Encasement
$\Delta$ 4/7/74	TLW		Add Storm Sewer
$\Delta$ 6/27/74	TLW		Added Emergency Drain
$\Delta$ 6/27/74	TLW		Rev. Vert. Align. Sta. 73+57.2 to 83+91.3



CITY OF TAMPA, FLORIDA  
 SEWAGE DISPOSAL SYSTEM  
**26 TH STREET FORCE MAIN**

DIVISION 4FI  
**PLAN AND PROFILE**  
 STA. 72+50 TO STA. 84+40

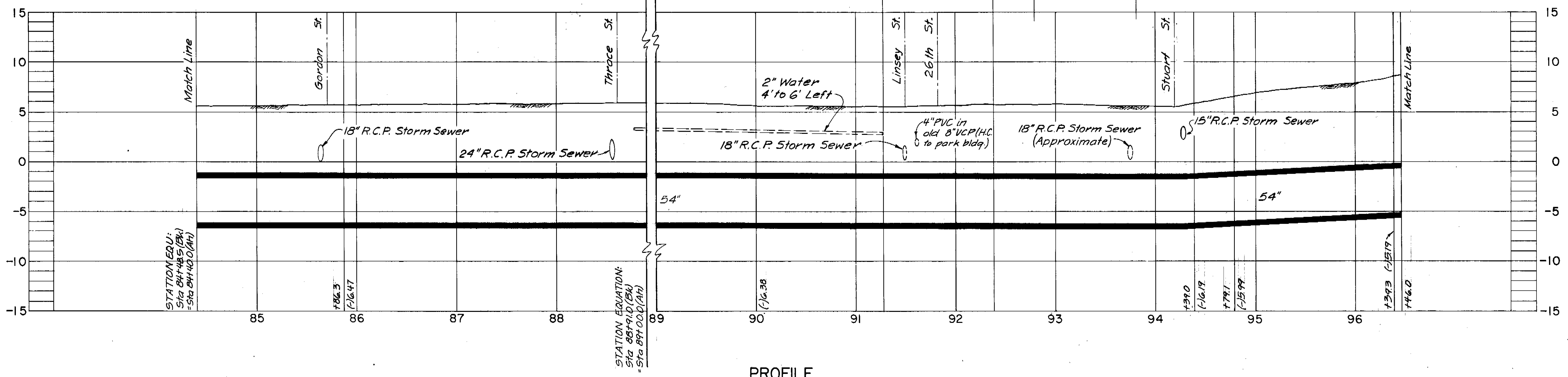
PROJ. NO. S202-70-30D 4FI  
 SHEET **9** OF 17  
 DATE JULY, 1972 REV. 8



**AS BUILT**

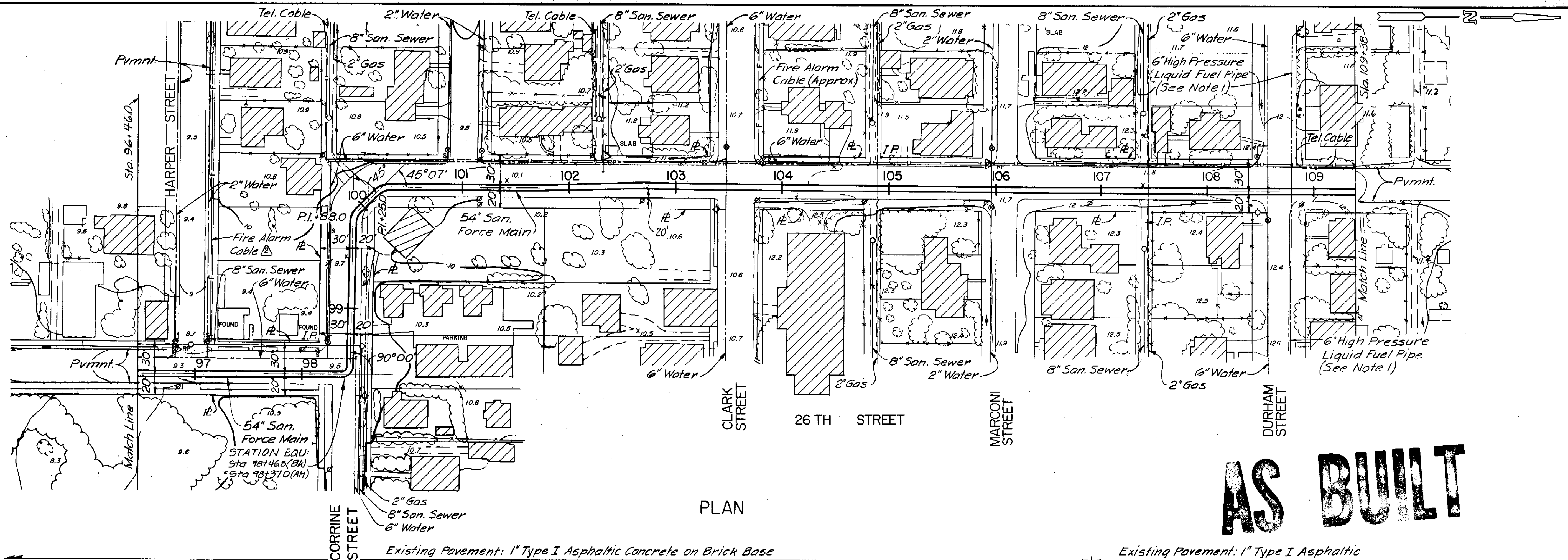
PLAN

Existing Pavement: 3 to 4 courses of Single Surface Treatment on 6" Limerock Base  
 Horizontal Circular Curve  
 Exist. Pmnt: Single Surface Treatment on Brick Base  
 Existing Pavement: 1" Type I Asphaltic Concrete on Brick Base



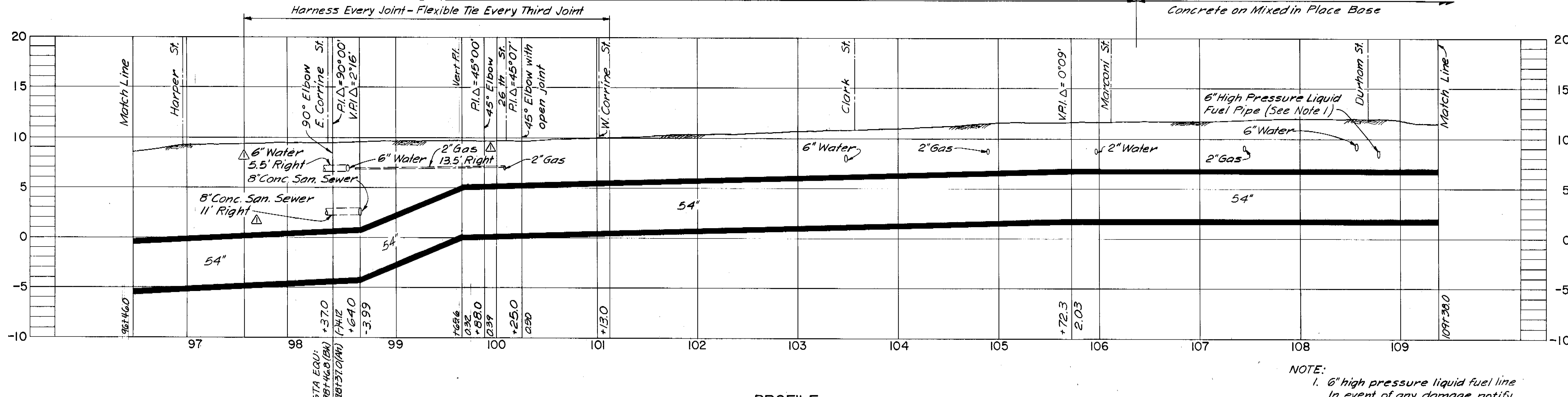
PROFILE

COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.		SCALE 50 0 50 100 FT HORIZ. 1" = 50' 5 0 5 10 VERT. 1" = 5'		CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM <b>26 TH STREET FORCE MAIN</b>		DIVISION 4F1 <b>PLAN AND PROFILE</b> STA. 84+40 TO STA. 96+46		PROJ. NO. S202-70-300 4F1 SHEET <b>10</b> OF 17 DATE JULY, 1972    REV. 0	
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604		DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.		APPROVED DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS		NO. DATE APP. REVISION 10/17/80 CJ As-Built per Inspectors Rpt.		DATE JULY, 1972		REV. 0	



PLAN

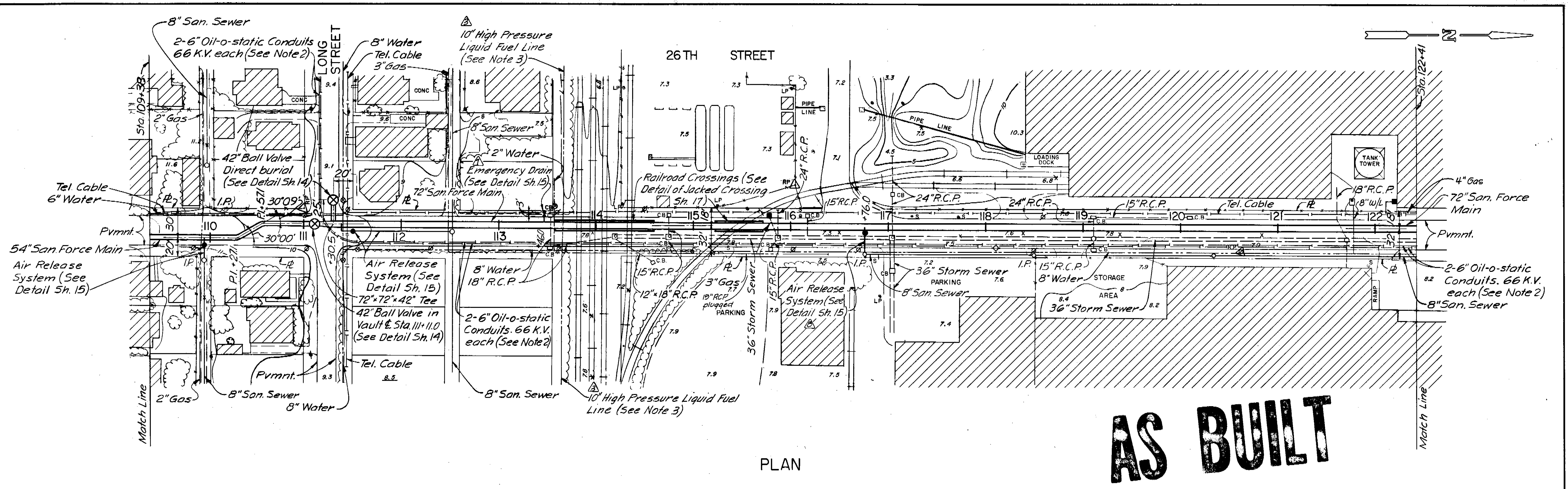
**AS BUILT**



PROFILE

NOTE:  
 1. 6" high pressure liquid fuel line  
 In event of any damage notify  
 Central Florida Pipeline Corp.,  
 1904 Hemlock St., Tampa.  
 (Telephone No. 247-2772)

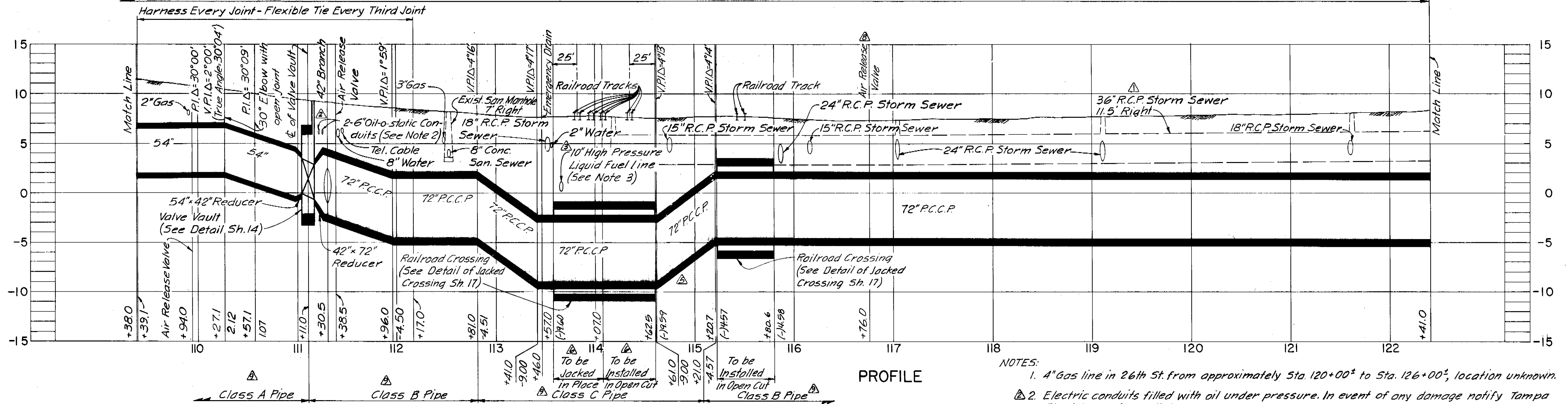
COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		RP REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.		SCALE 50    0    50    100 FT HORIZ. 1" = 50' 5    0    5    10 VERT. 1" = 5'		CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM <b>26 TH STREET FORCE MAIN</b>		DIVISION 4FI <b>PLAN AND PROFILE</b> STA. 96+46 TO STA. 109+38		PROJ. NO. S202-70-300 4FI SHEET <b>11</b> OF 17 DATE JULY, 1972    REV. 2	
GREELEY AND HANSEN ENGINEERS 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604		DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.		APPROVED DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS		NO. DATE APP. REVISION 1016/80 GJ As-Built per Inspectors Rpt 9/22/77 TLW Add Fire Alarm Cable 7/2/74 TLW Add Ex. Utilities in Profile					



**AS BUILT**

PLAN

Existing Pavement: 1" Type I Asphaltic Concrete on Mixed in Place Base



PROFILE

- NOTES:
1. 4" Gas line in 26th St. from approximately Sta. 120+00 to Sta. 126+00, location unknown.
  2. Electric conduits filled with oil under pressure. In event of any damage notify Tampa Electric Co. immediately.
  3. 10" high pressure liquid fuel line. In event of any damage notify Central Florida Pipeline Corp., 1904 Hemlock St., Tampa (Telephone No. 241-2772).

COMPILED BY PHOTOGRAMMETRIC METHODS  
**ABRAMS AERIAL SURVEY CORPORATION**  
 LANSING, MICHIGAN  
 DATE OF PHOTOGRAPHY OCTOBER 1970 DATE OF MAPPING FEBRUARY 1971

**GREELEY AND HANSEN ENGINEERS**  
 14 E. JACKSON BOULEVARD  
 CHICAGO, ILLINOIS 60604

DESIGNED T.L.W.  
 DRAWN A.A.  
 CHECKED T.L.W.

APPROVED \_\_\_\_\_  
 DATE \_\_\_\_\_  
 Supt., Dept. of Sanitary Sewers  
 DATE \_\_\_\_\_  
 GREELEY AND HANSEN, ENGINEERS

NO.	DATE	APP.	REVISION
1	8/11/77	TLW	Add Pipe Class in Profile
2	8/15/77	TLW	Add Air Release Valve, Sta. 116+76
3	8/11/77	TLW	Add Emergency Drain Sta. 113+46
4	8/11/77	TLW	Reduced length of Jacking
5	8/11/77	TLW	Rev. Vert. Align. Sta. 112+81 to 115+21
6	8/11/77	TLW	Add Note 3
7	8/11/77	TLW	Add Fuel Line, Sta. 113+66
8	10/24/74	TLW	Omit Elec. Conduit Encasement
9	7/21/74	TLW	Add Ex. Storm Sewer in Profile

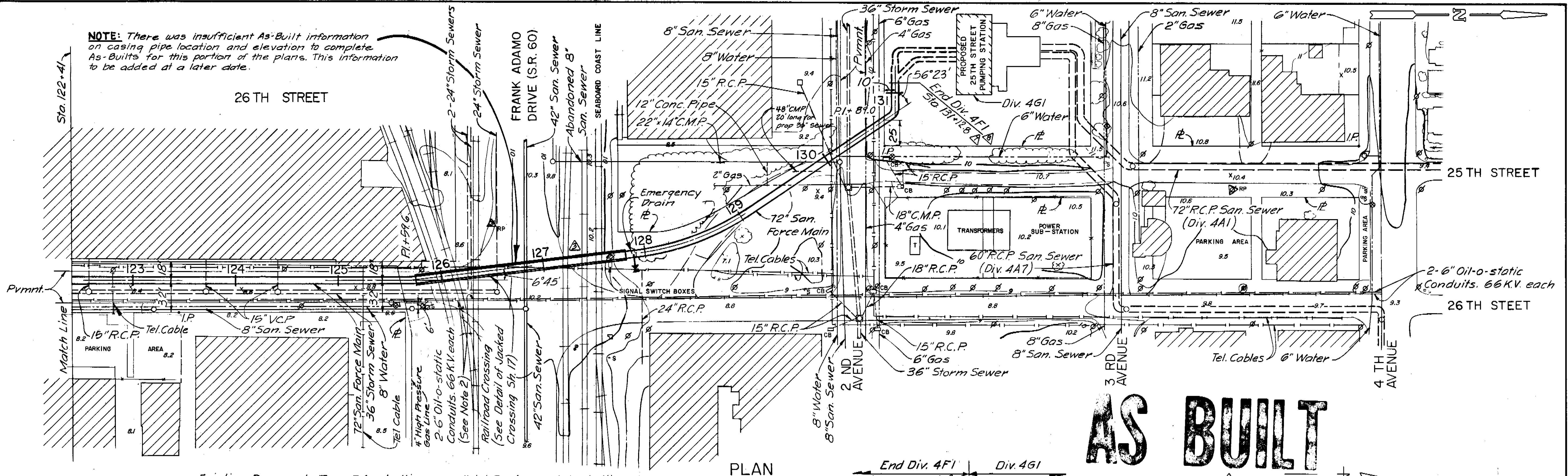
SCALE  
 50 0 50 100 FT  
 HORIZ. 1" = 50'  
 5 0 5 10  
 VERT. 1" = 5'

CITY OF TAMPA, FLORIDA  
 SEWAGE DISPOSAL SYSTEM  
**26TH STREET FORCE MAIN**

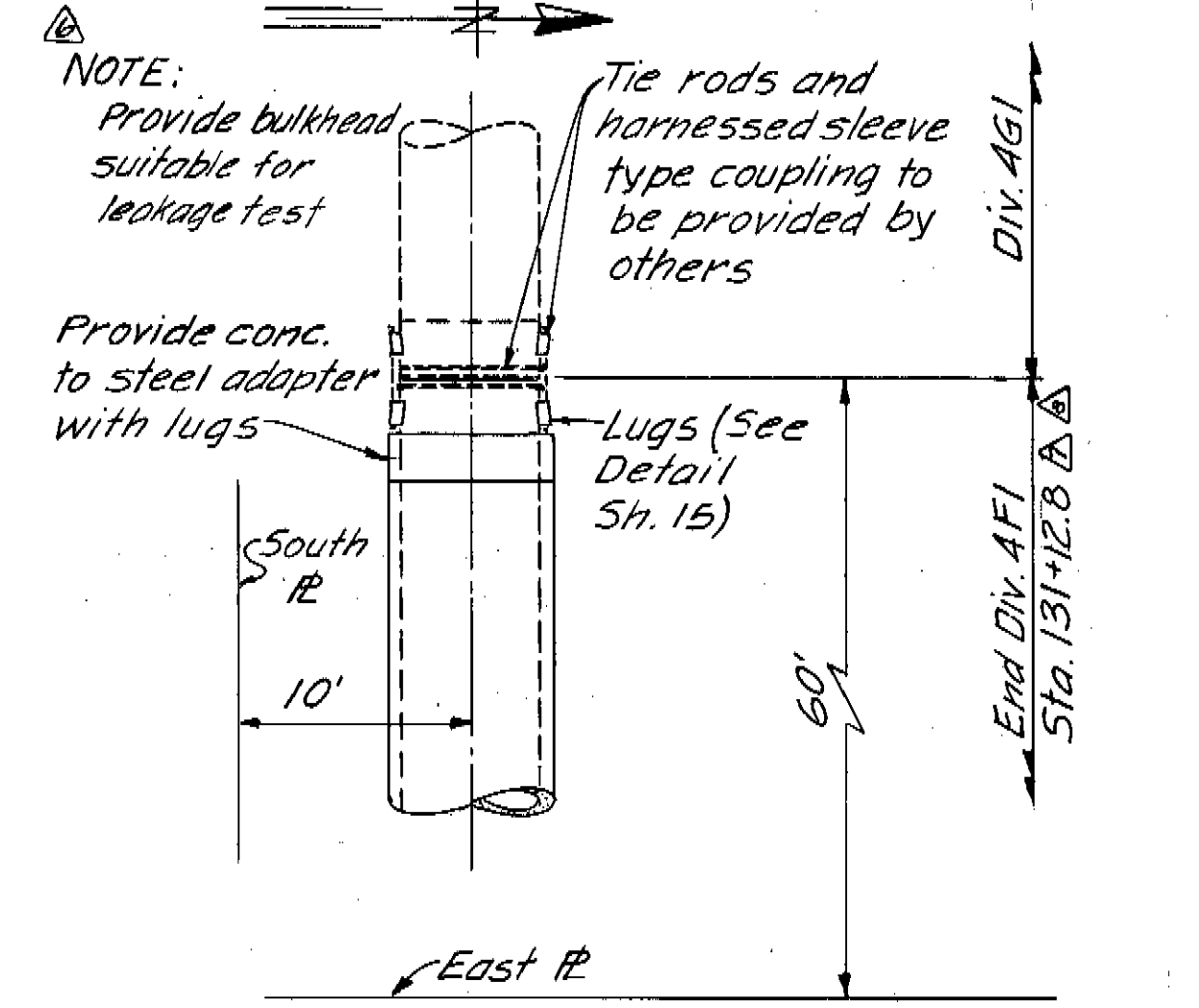
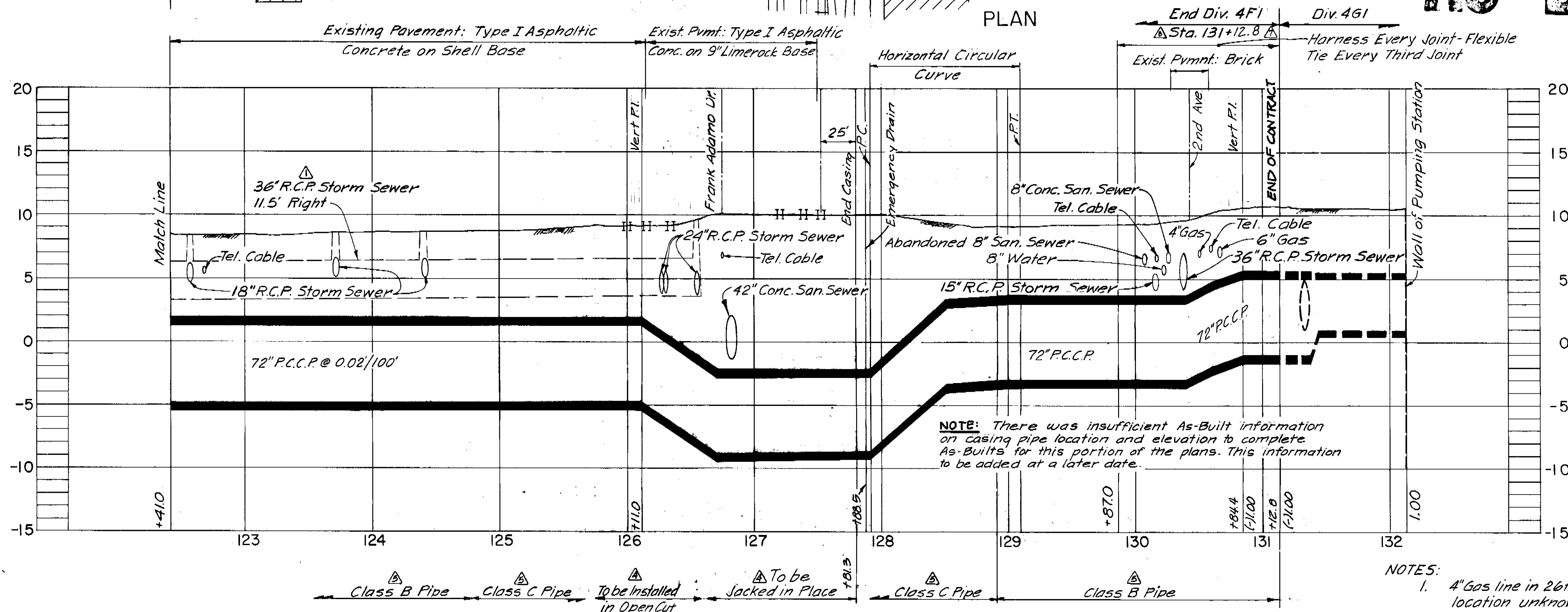
DIVISION 4F1  
**PLAN AND PROFILE**  
 STA. 109+38 TO STA. 122+41

PROJ. NO. S202-70-300 4F1  
 SHEET **12** OF 17  
 DATE JULY, 1972 REV. 9

NOTE: There was insufficient As-Built information on casing pipe location and elevation to complete As-Built for this portion of the plans. This information to be added at a later date.



**AS BUILT**



PLAN OF CONNECTION AT STA. 131+12.8  
SCALE: 1/8"=1'-0"

- NOTES:
- 4" Gas line in 26th St. from approximately Sta. 120+00' to Sta. 126+00' location unknown.
  - Electric conduits filled with oil under pressure. In event of any damage notify Tampa Electric Co. immediately.

COMPILED BY PHOTOGRAMMETRIC METHODS <b>ABRAMS AERIAL SURVEY CORPORATION</b> LANSING, MICHIGAN DATE OF PHOTOGRAPHY OCTOBER 1970    DATE OF MAPPING FEBRUARY 1971		REFERENCE POINT THESE SELECTED POINTS ARE PLOTTED WITH EXTREME CARE AND ARE RECOMMENDED AS BASIC TIES DURING CONSTRUCTION.	<table border="1"> <tr><td>10/21/80</td><td>CA</td><td>As-Built per Inspectors Rpt</td></tr> <tr><td>4/16/80</td><td>TLW</td><td>Rev. Sta. 131+28.4 to 131+21.4</td></tr> <tr><td>8/24/77</td><td>TLW</td><td>Add Note</td></tr> <tr><td>8/17/77</td><td>TLW</td><td>Add Pipe Class in Profile</td></tr> <tr><td>8/11/77</td><td>TLW</td><td>Reduced length in Jacking</td></tr> <tr><td>7/13/77</td><td>TLW</td><td>Rev. Horiz. Align. 125+70 to 129+20</td></tr> <tr><td>10/24/74</td><td>TLW</td><td>Omit Elec. Conduit Encasement</td></tr> <tr><td>7/2/74</td><td>TLW</td><td>Add Ex. Storm Sewer in Profile</td></tr> <tr><td>NO.</td><td>DATE</td><td>APP.</td><td>REVISION</td></tr> </table>	10/21/80	CA	As-Built per Inspectors Rpt	4/16/80	TLW	Rev. Sta. 131+28.4 to 131+21.4	8/24/77	TLW	Add Note	8/17/77	TLW	Add Pipe Class in Profile	8/11/77	TLW	Reduced length in Jacking	7/13/77	TLW	Rev. Horiz. Align. 125+70 to 129+20	10/24/74	TLW	Omit Elec. Conduit Encasement	7/2/74	TLW	Add Ex. Storm Sewer in Profile	NO.	DATE	APP.	REVISION
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NO.	DATE	APP.	REVISION																												
<b>GREELEY AND HANSEN ENGINEERS</b> 14 E. JACKSON BOULEVARD CHICAGO, ILLINOIS 60604	DESIGNED T.L.W. DRAWN A.A. CHECKED T.L.W.	APPROVED _____ DATE _____ SUPT., DEPT. OF SANITARY SEWERS DATE _____ GREELEY AND HANSEN, ENGINEERS	<table border="1"> <tr><td>50</td><td>0</td><td>50</td><td>100</td><td>FT</td></tr> <tr><td colspan="5">HORIZ. 1"=50'</td></tr> <tr><td>5</td><td>0</td><td>5</td><td>10</td><td>FT</td></tr> <tr><td colspan="5">VERT. 1"=5'</td></tr> </table>	50	0	50	100	FT	HORIZ. 1"=50'					5	0	5	10	FT	VERT. 1"=5'												
50	0	50	100	FT																											
HORIZ. 1"=50'																															
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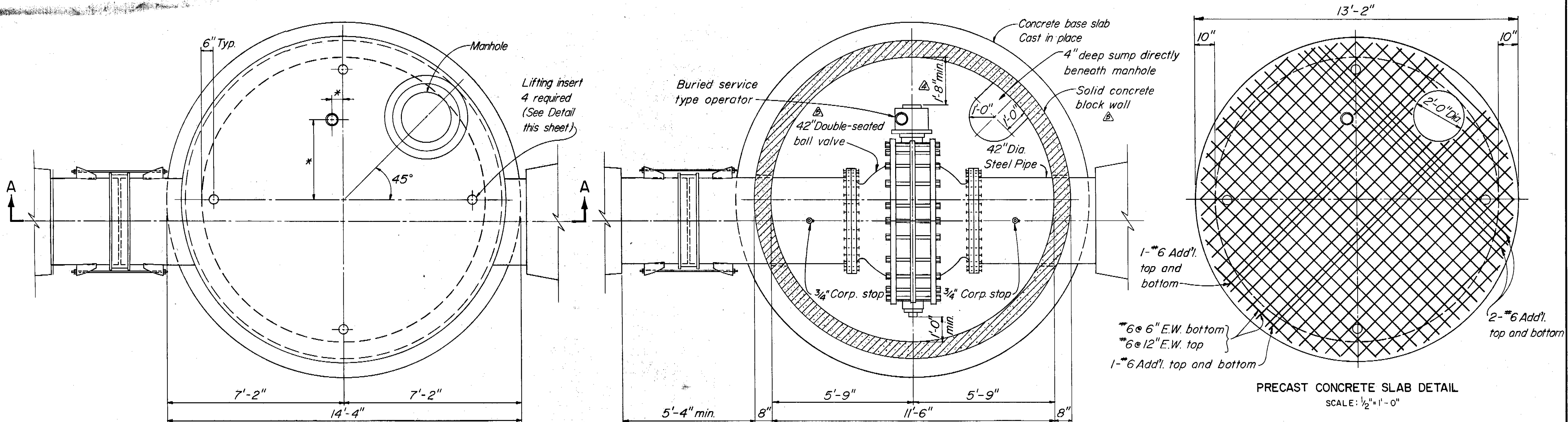
**PROFILE**

SCALE  
50 0 50 100 FT  
HORIZ. 1"=50'  
5 0 5 10 FT  
VERT. 1"=5'

CITY OF TAMPA, FLORIDA  
SEWAGE DISPOSAL SYSTEM  
**26 TH STREET FORCE MAIN**

DIVISION 4F1  
**PLAN AND PROFILE**  
STA. 122+41 TO STA. 131+12.8

PROJ. No. S202-70-30D 4F1	SHEET <b>13</b> OF 17
DATE JULY, 1972	REV. 7

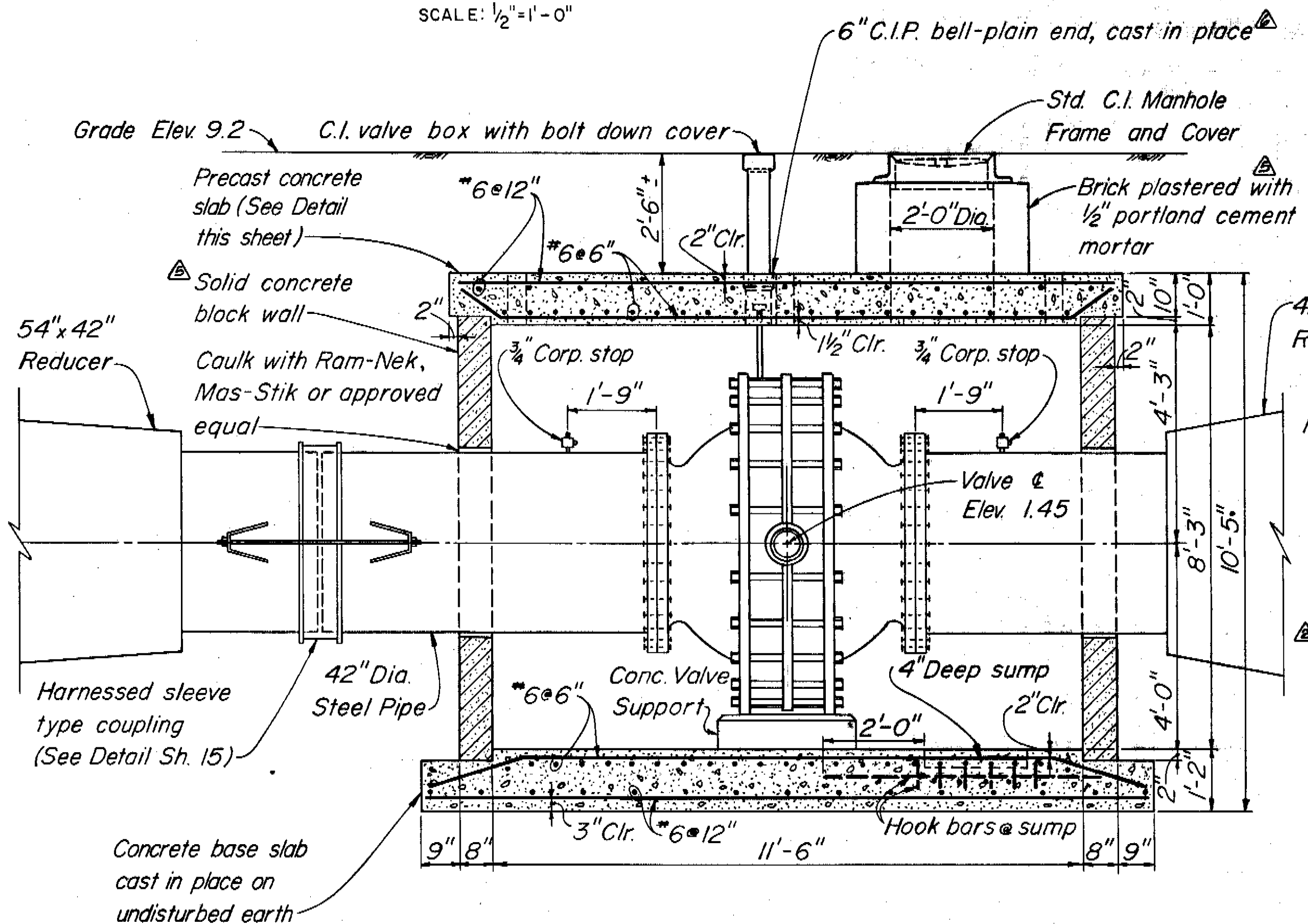


PRECAST CONCRETE SLAB DETAIL  
SCALE: 1/2" = 1'-0"

PLAN  
SCALE: 1/2" = 1'-0"

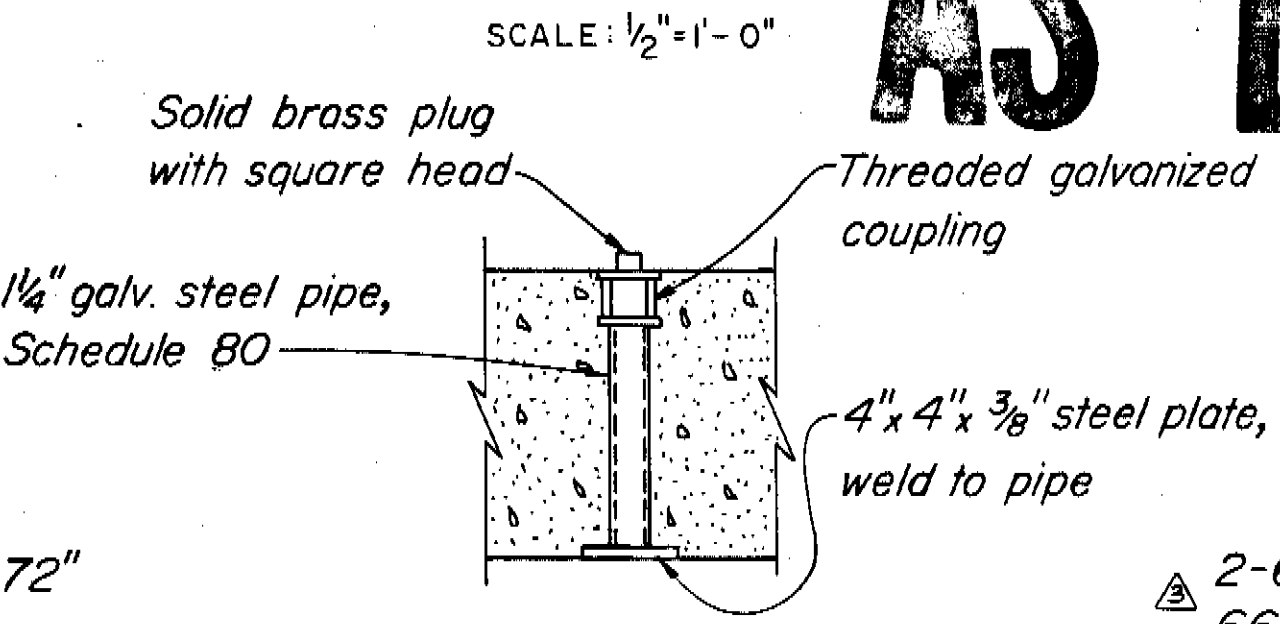
SECTIONAL PLAN  
SCALE: 1/2" = 1'-0"

**AS BUILT**

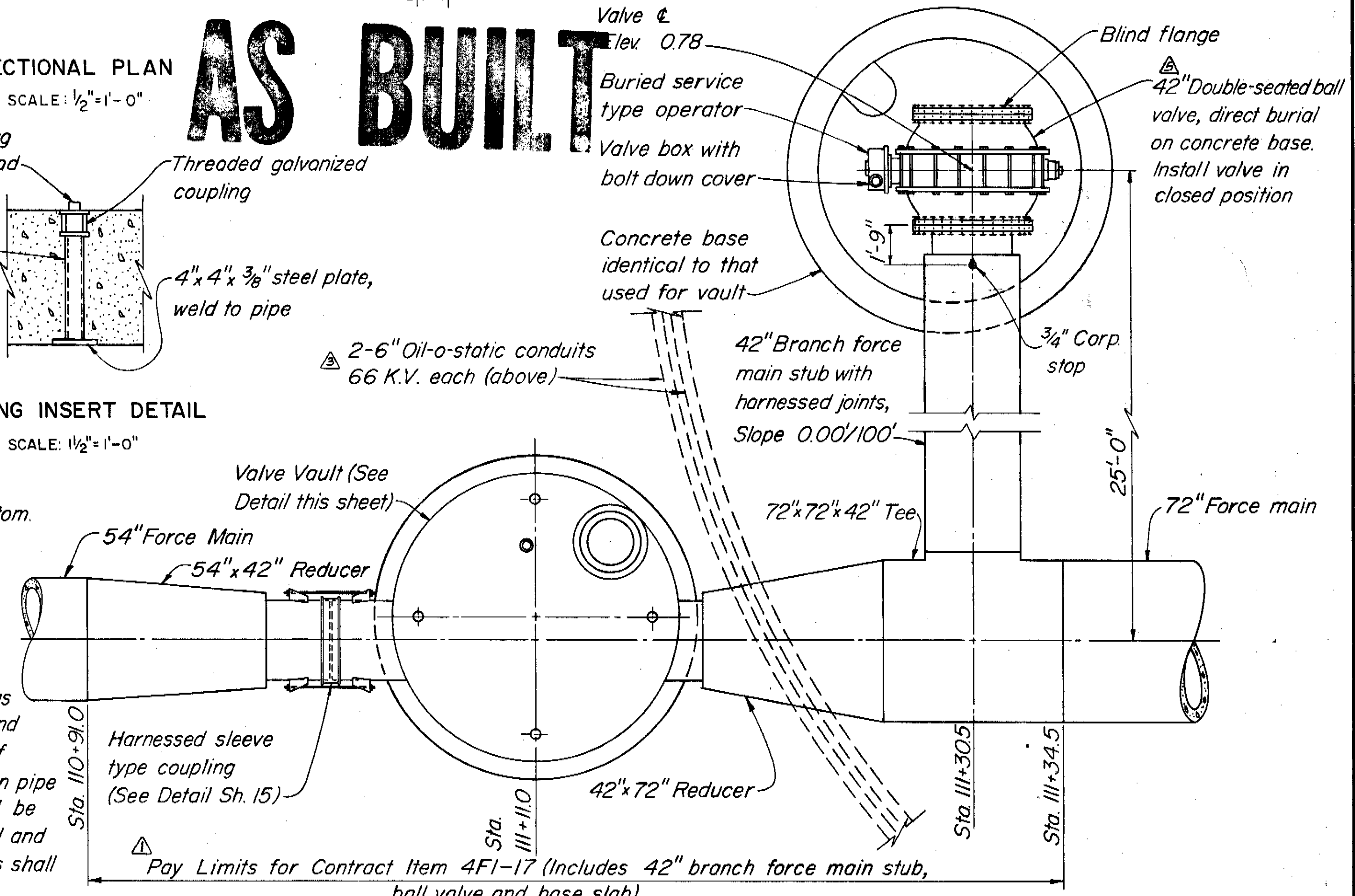


SECTION A-A  
SCALE: 1/2" = 1'-0"

- NOTES:
1. 2-#6 add'l. around sump at top and bottom.
  2. \*Dimensions to be determined after selection of valve.
  3. All steel pipe and fittings including flexible pipe couplings and appurtenances and steel pipe sections of concrete or cast-iron pipe adapter fittings shall be cement-mortar lined and all exterior surfaces shall be hot bituminous coated and wrapped.



LIFTING INSERT DETAIL  
SCALE: 1/2" = 1'-0"



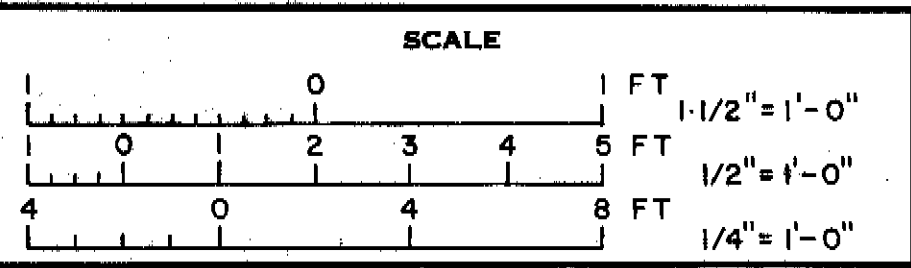
PLAN OF VALVE VAULT AND BRANCH FORCE MAIN STUB  
SCALE: 1/4" = 1'-0"

GREELEY AND HANSEN  
ENGINEERS  
222 S. RIVERSIDE PLAZA  
CHICAGO, ILLINOIS 60606

DESIGNED T.L.W.  
DRAWN A.A.  
CHECKED T.L.W.

APPROVED  
DATE  
Supt., Dept. of Sanitary Sewers  
DATE  
Greeley and Hansen, Engineers

NO.	DATE	APP.	REVISION
1	1/31/78	TLW	Rev. Note
2	2/22/77	TLW	Rev. Note
3	3/22/77	TLW	Rev. Dimension
4	10/24/74	TLW	Omit Elec. Conduit Encasement
5	7/11/74	TLW	Added Note 3
6	6/17/74	TLW	Added Pay Limits

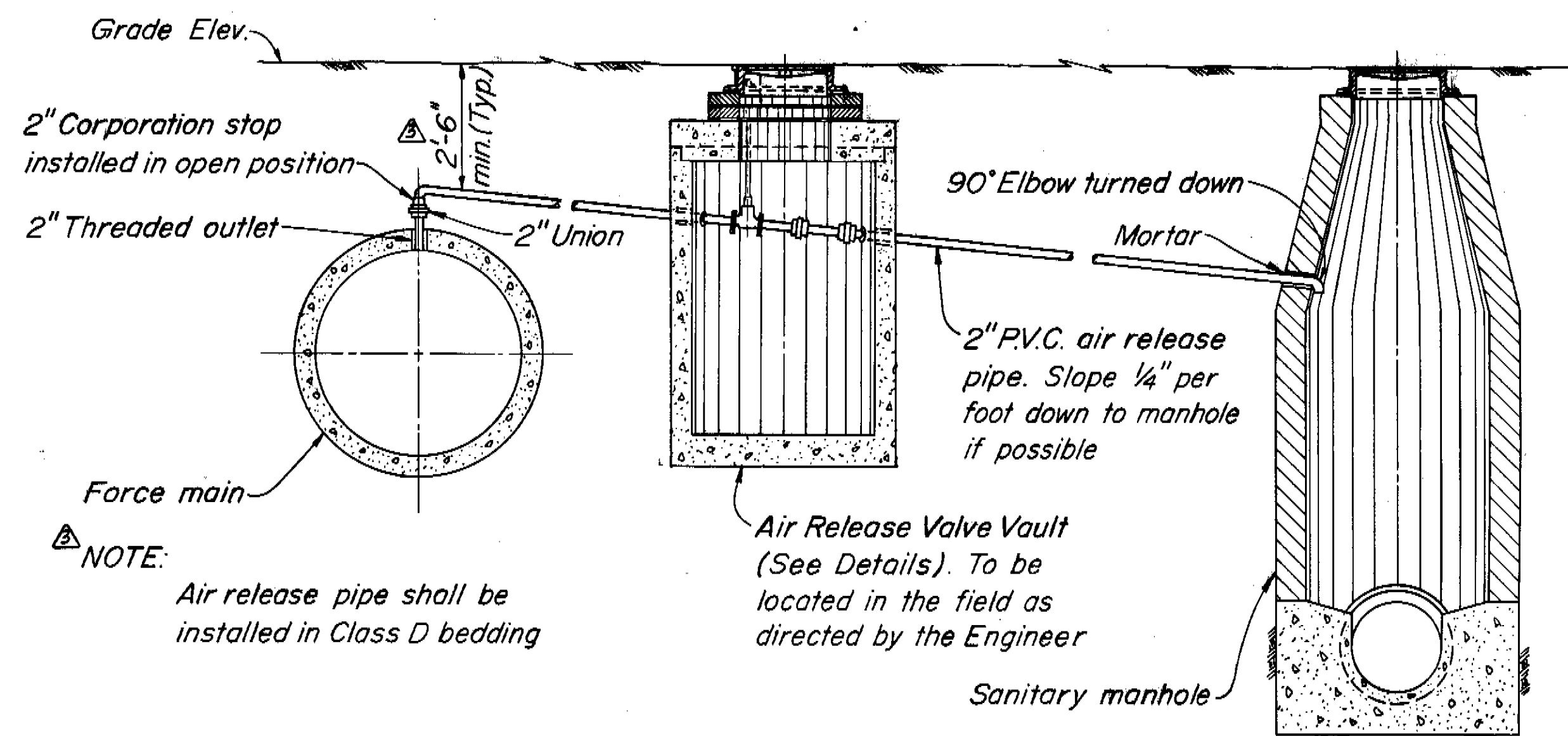


CITY OF TAMPA, FLORIDA  
SEWAGE DISPOSAL SYSTEM  
26TH STREET FORCE MAIN

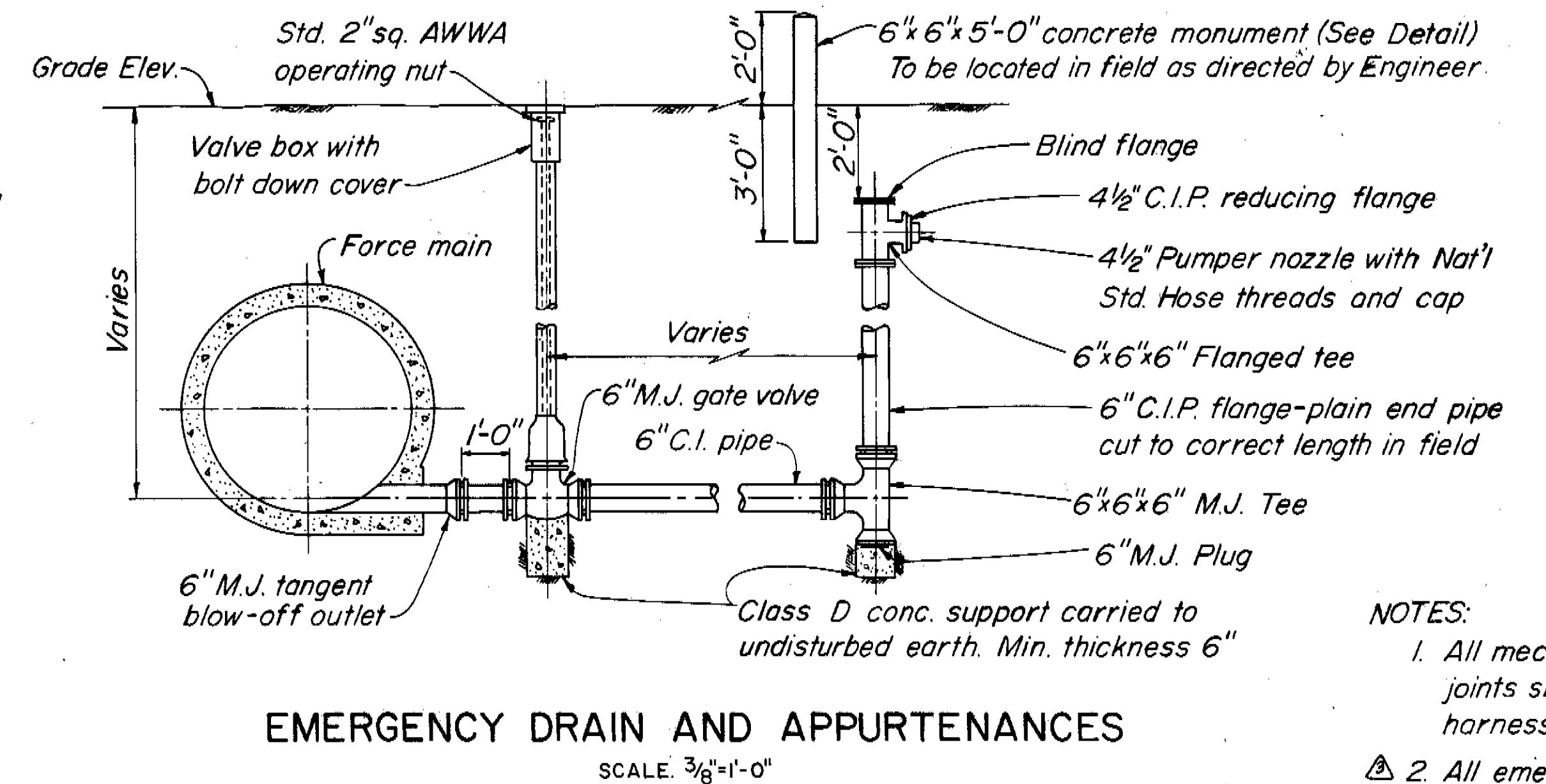
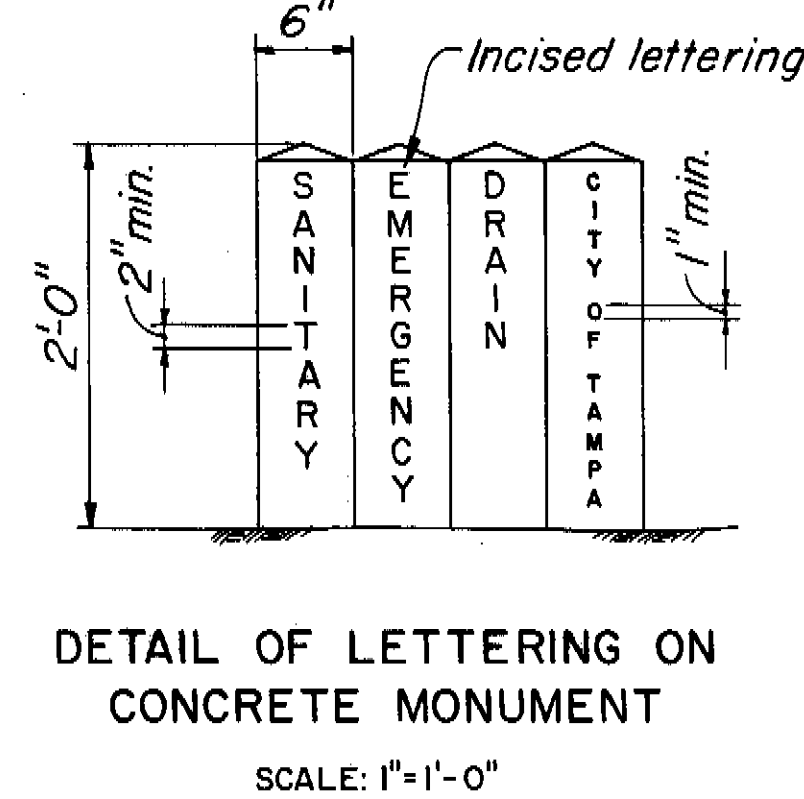
DIVISION 4F1  
VALVE VAULT DETAILS

PROJ. NO. S202-70-30D 4F1  
SHEET 14 OF 17  
DATE JULY, 1972 REV. 46

156-113

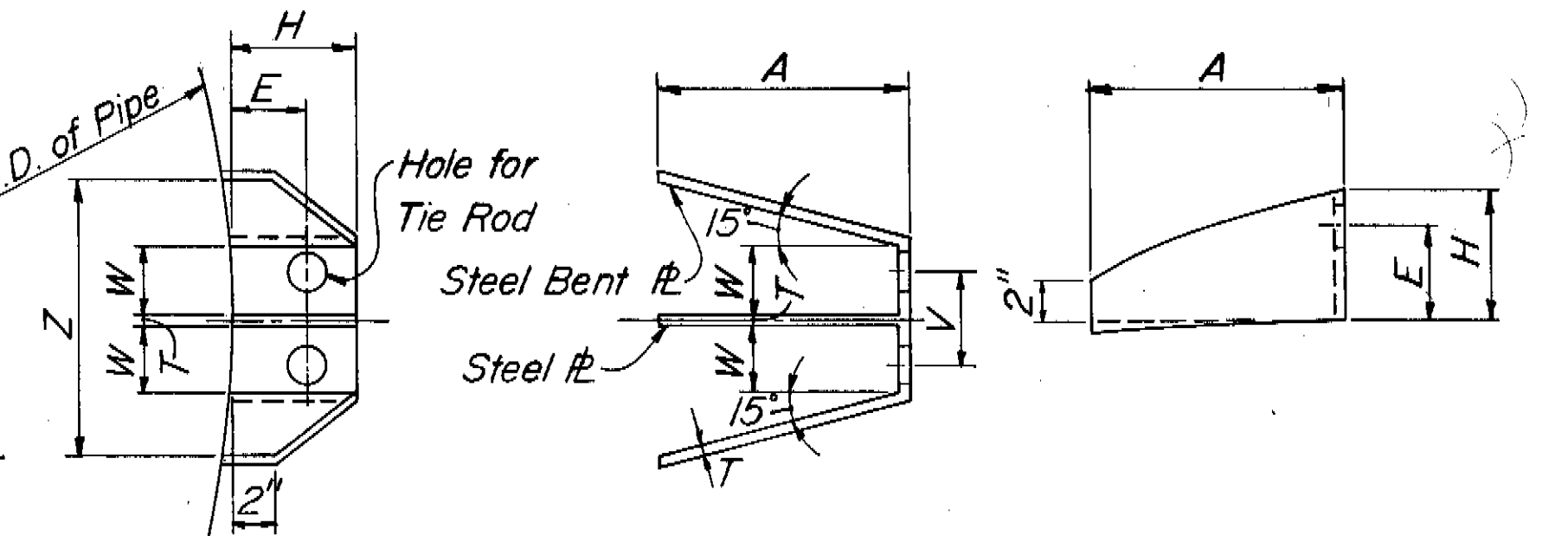
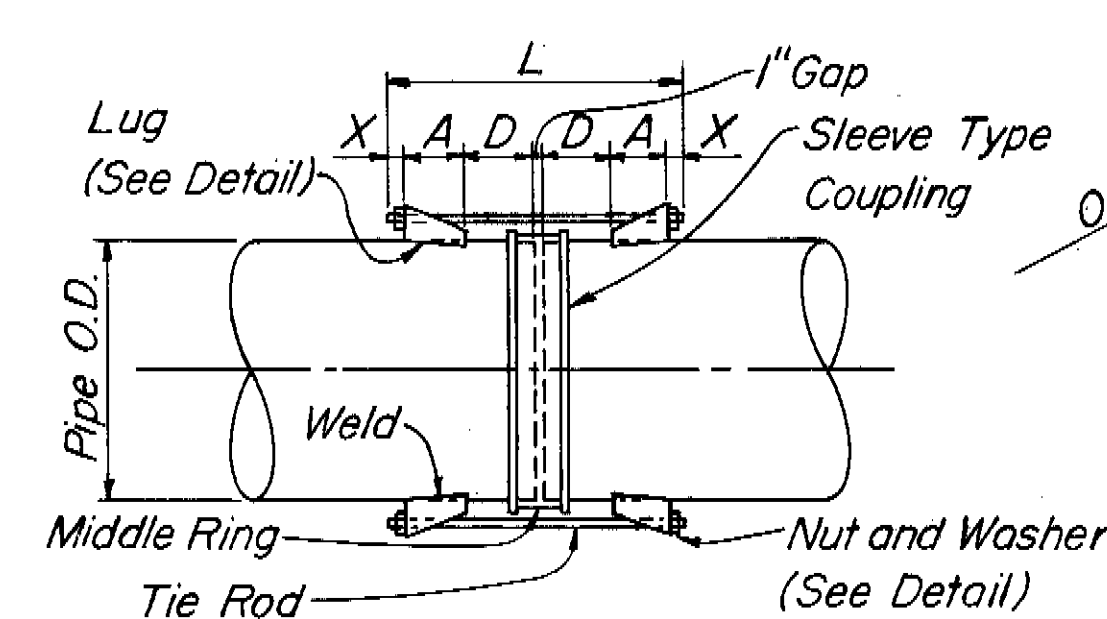
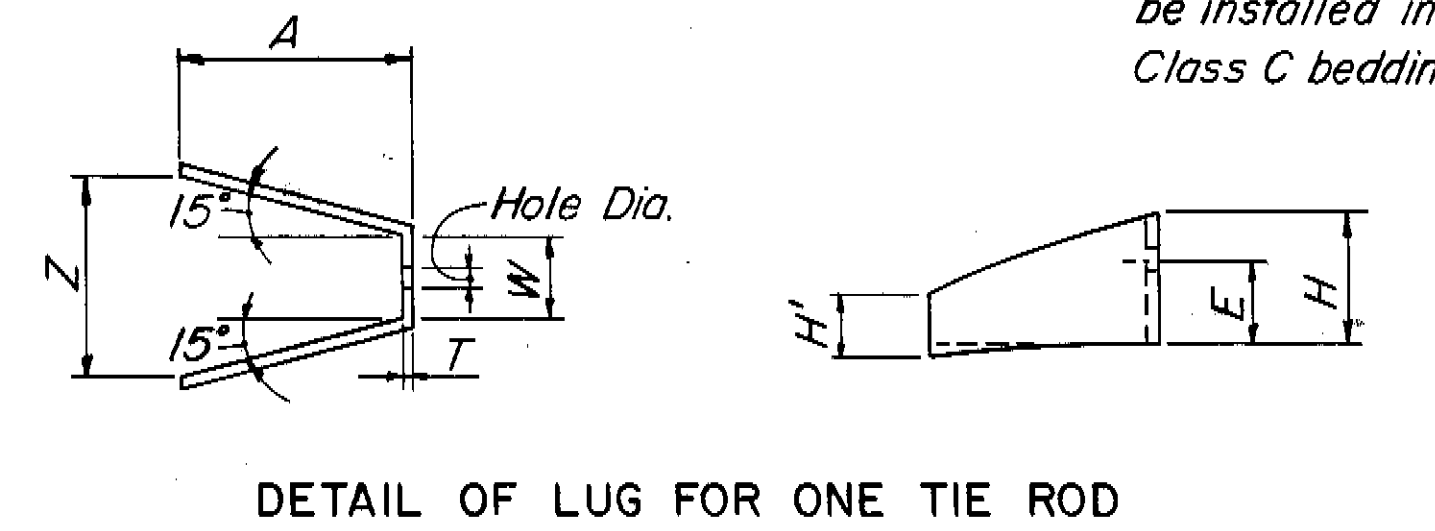
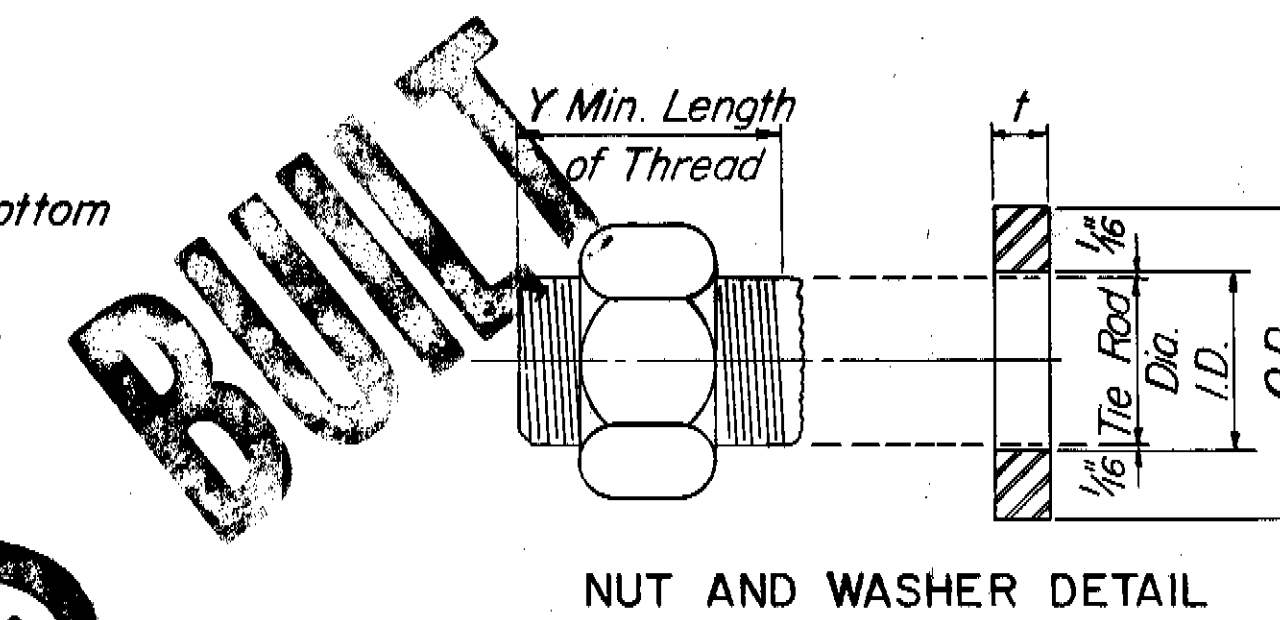
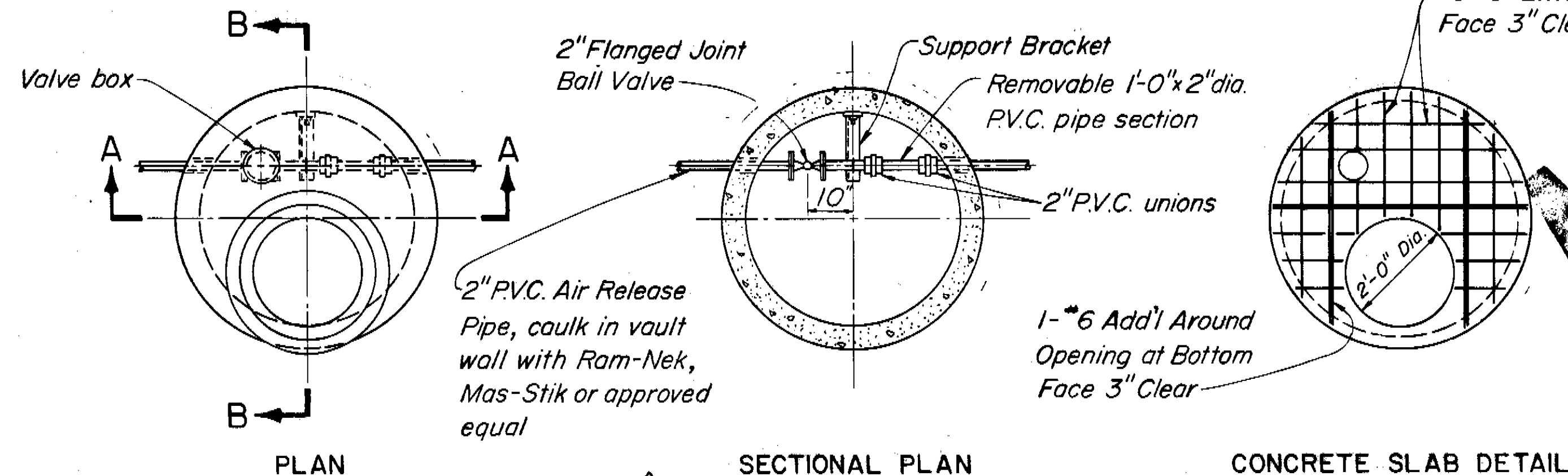


**AIR RELEASE SYSTEM**  
SCALE: 3/8"=1'-0"



**EMERGENCY DRAIN AND APPURTENANCES**  
SCALE: 3/8"=1'-0"

- NOTES:  
1. All mechanical joints shall be harnessed  
2. All emergency drain piping shall be installed in Class C bedding



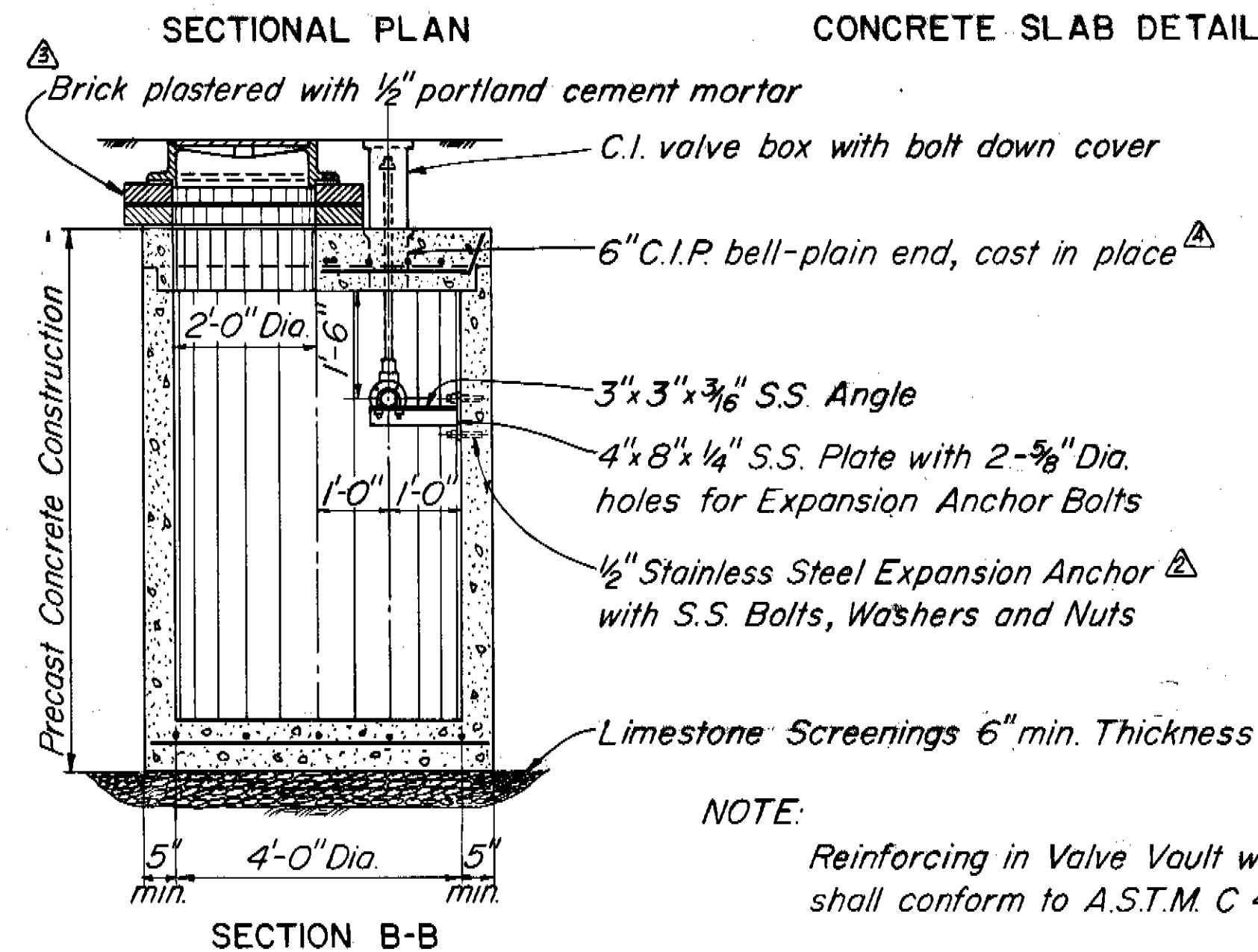
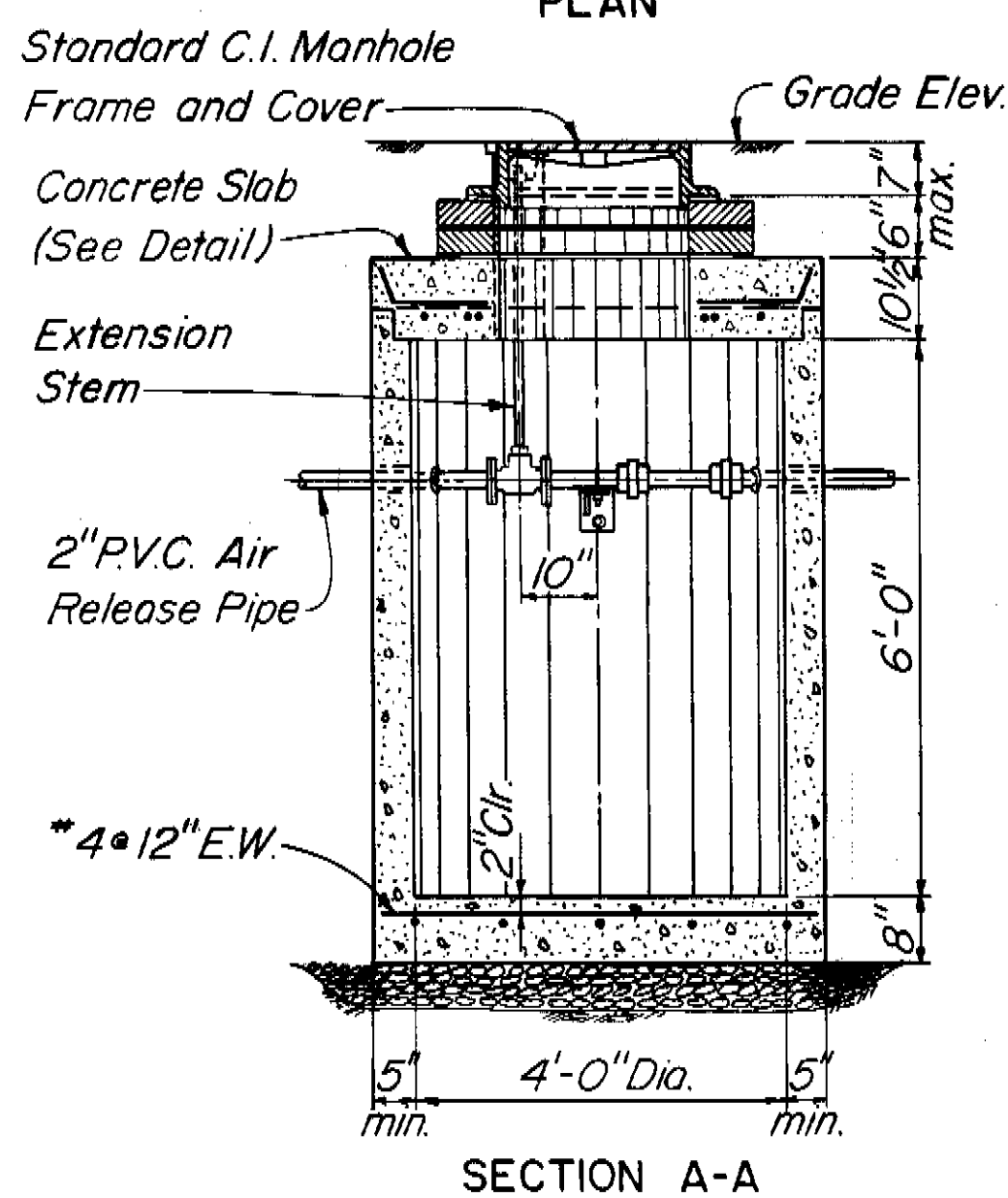
**HARNASS ASSEMBLY**

**DETAIL OF LUG FOR TWO TIE RODS**

PIPE SIZE	WALL THICKNESS	PIPE O.D.	MIDDLE RING COUPLING		HARNASS TIE ROD				COUPLING JOINT LOCATION		
			LENGTH	THICKNESS	NO.	DIA.	X	L		Y	THREADS PER IN.
42"	1/2"	43"	10"	1/2"	2	1 5/8"	2 5/8"	4 1/4"	3 3/8"	8	STATION 111+02.2
54"	1/2"	55"	10"	1/2"	2	1 7/8"	2 7/8"	5 1/4"	3 5/8"	8	STATION 0+26.1
72"	1/2"	73"	10"	1/2"	4	2"	3"	5 1/4"	3 3/4"	8	STATION 131+28.4

TIE ROD DIA.	HARNASS LUGS - MINIMUM DIMENSIONS										NUT DIMENSIONS			WASHER DIMENSIONS			
	D	A	W	Z	T	E	H	H'	V	HOLE DIA.	WELD SIZE	HEIGHT	LONG DIA.	SHORT DIA.	I.D.	O.D.	t
1 5/8"	1 1/2"	9 1/2"	3 1/4"	8 1/8"	1/2"	3 7/8"	5 5/8"	2 1/2"	-	1 3/4"	3/8"	1 5/8"	3"	2 9/16"	1 3/4"	3 1/4"	7/16"
1 7/8"	1 1/2"	11"	3 1/16"	9 1/2"	1/2"	4"	6"	2 1/2"	-	2"	7/16"	1 7/8"	3 3/8"	2 15/16"	2"	3 5/8"	1/2"
2"	1 1/2"	12 1/8"	4"	14 7/8"	3/4"	4 1/4"	6 1/4"	-	4 3/4"	2 1/8"	1/2"	2"	3 5/8"	3 1/8"	2 1/8"	3 7/8"	1/2"

**DETAILS OF HARNESSED SLEEVE-TYPE COUPLING JOINT**  
NOT TO SCALE



**AIR RELEASE VALVE VAULT DETAILS**  
SCALE: 1/2"=1'-0"

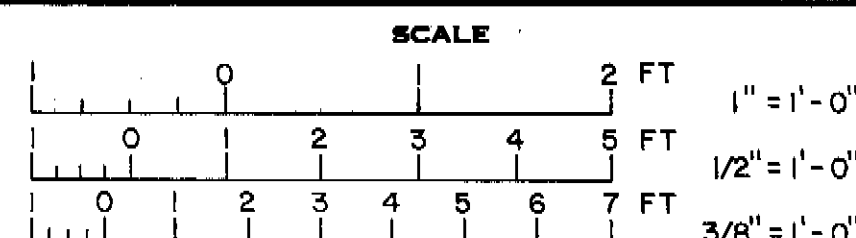
NOTE:  
Reinforcing in Valve Vault walls shall conform to A.S.T.M. C 478

GREELEY AND HANSEN  
ENGINEERS  
222 S. RIVERSIDE PLAZA  
CHICAGO, ILLINOIS 60606

DESIGNED T.L.W.  
DRAWN A.A.  
CHECKED T.L.W.

APPROVED  
DATE  
Supt., Dept. of Sanitary Sewers  
DATE  
GREELEY AND HANSEN, ENGINEERS

NO.	DATE	APP.	REVISION
1	1/3/78	TLW	Rev. Note, Air Release Valve
2	8/22/77	TLW	Add Note
3	8/11/77	TLW	Rev. Exp. Anchor Note
4	7/24/75	TLW	Revised dimensions

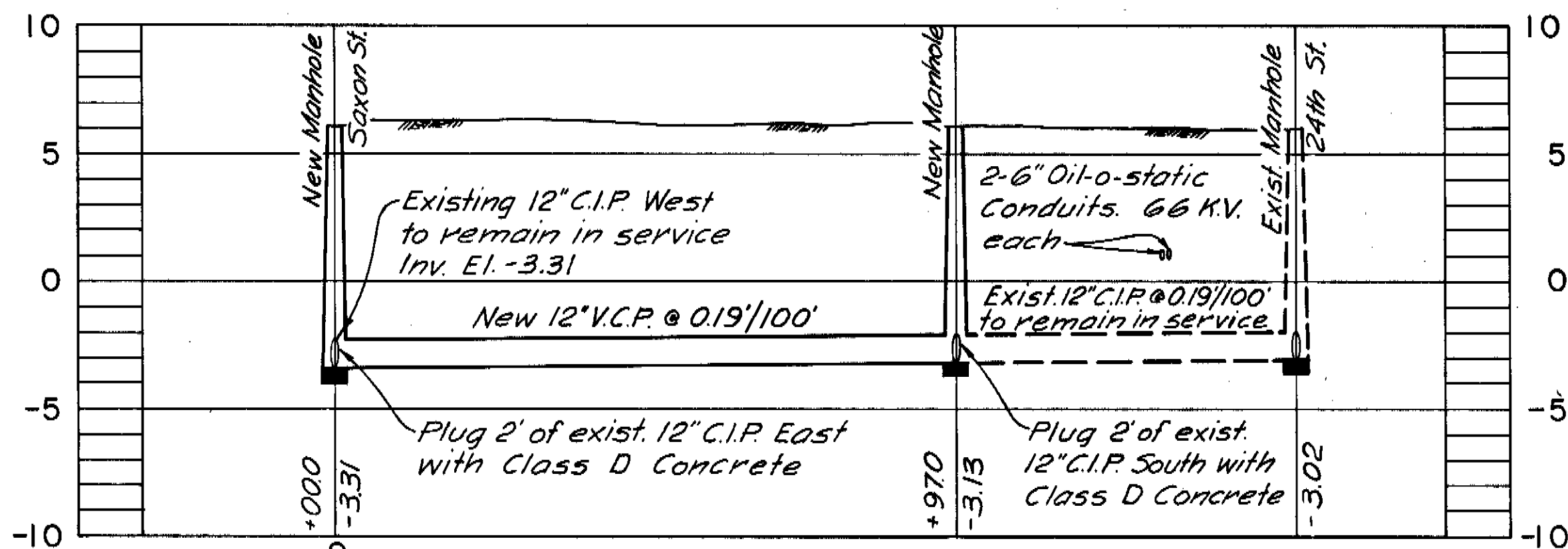
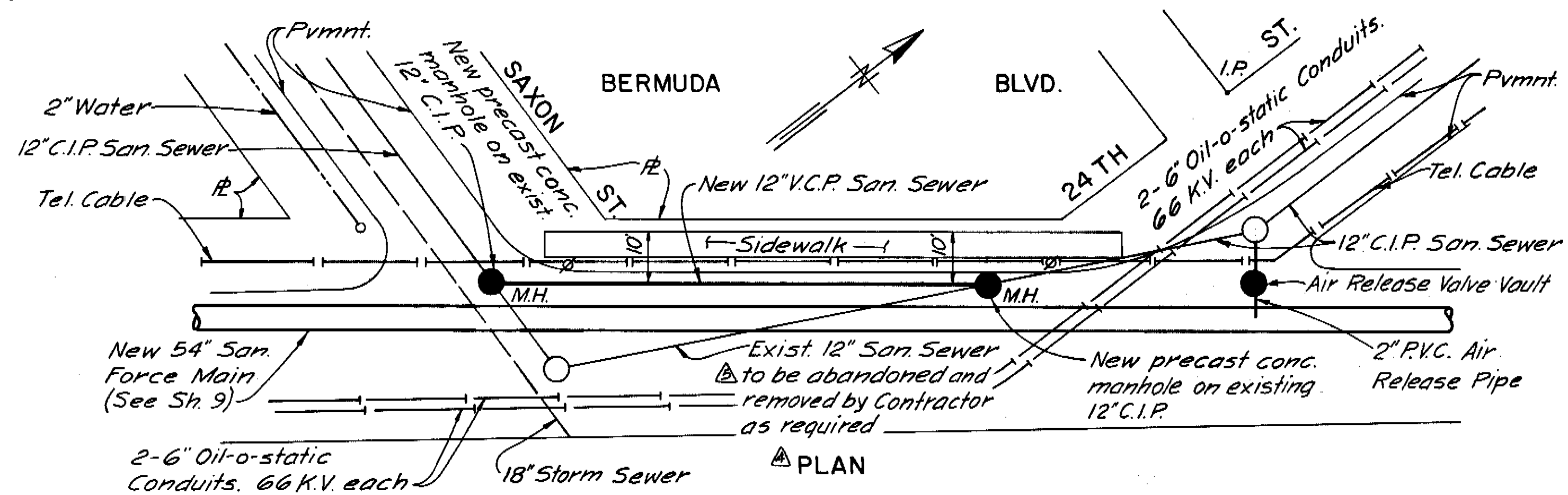


CITY OF TAMPA, FLORIDA  
SEWAGE DISPOSAL SYSTEM  
26TH STREET FORCE MAIN

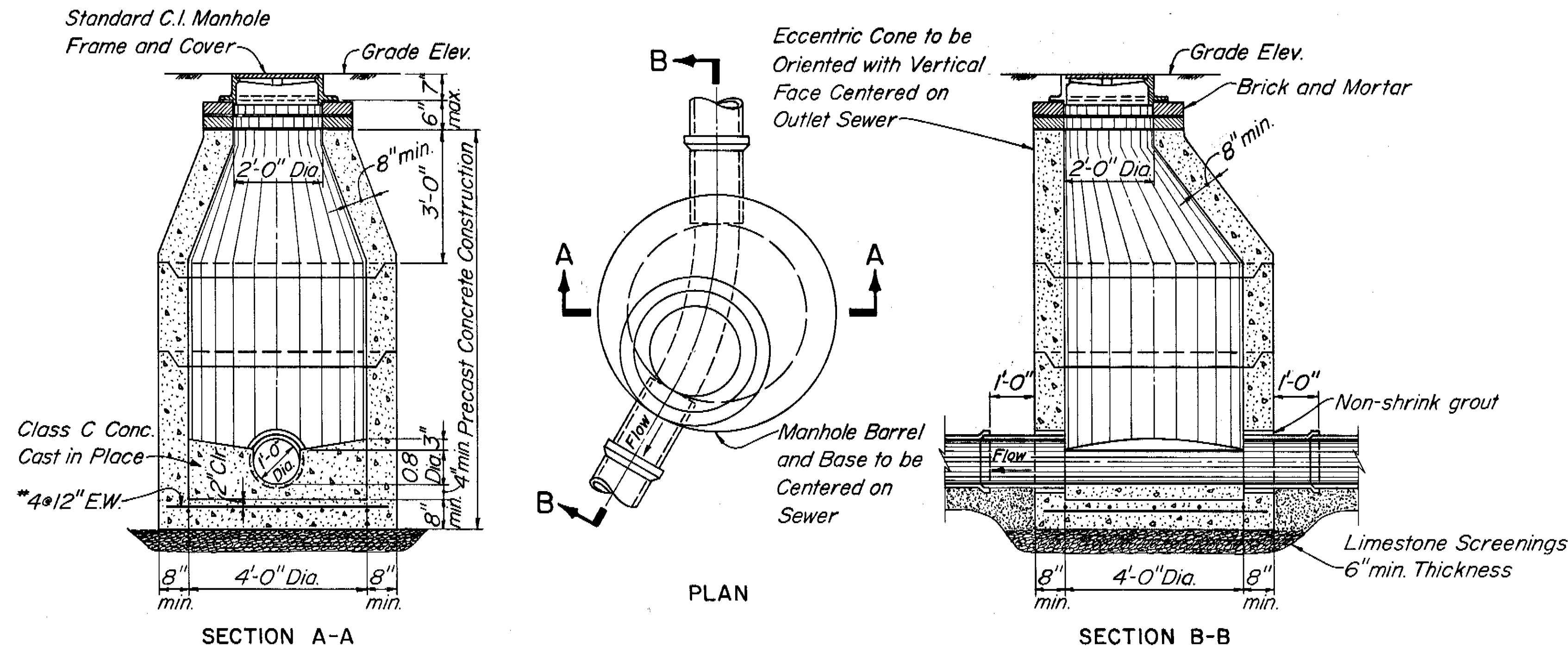
DIVISION 4F1  
MISCELLANEOUS DETAILS

PROJ. NO. S202-70-30D 4F1  
SHEET 15 OF 17  
DATE JULY, 1972 REV. 4

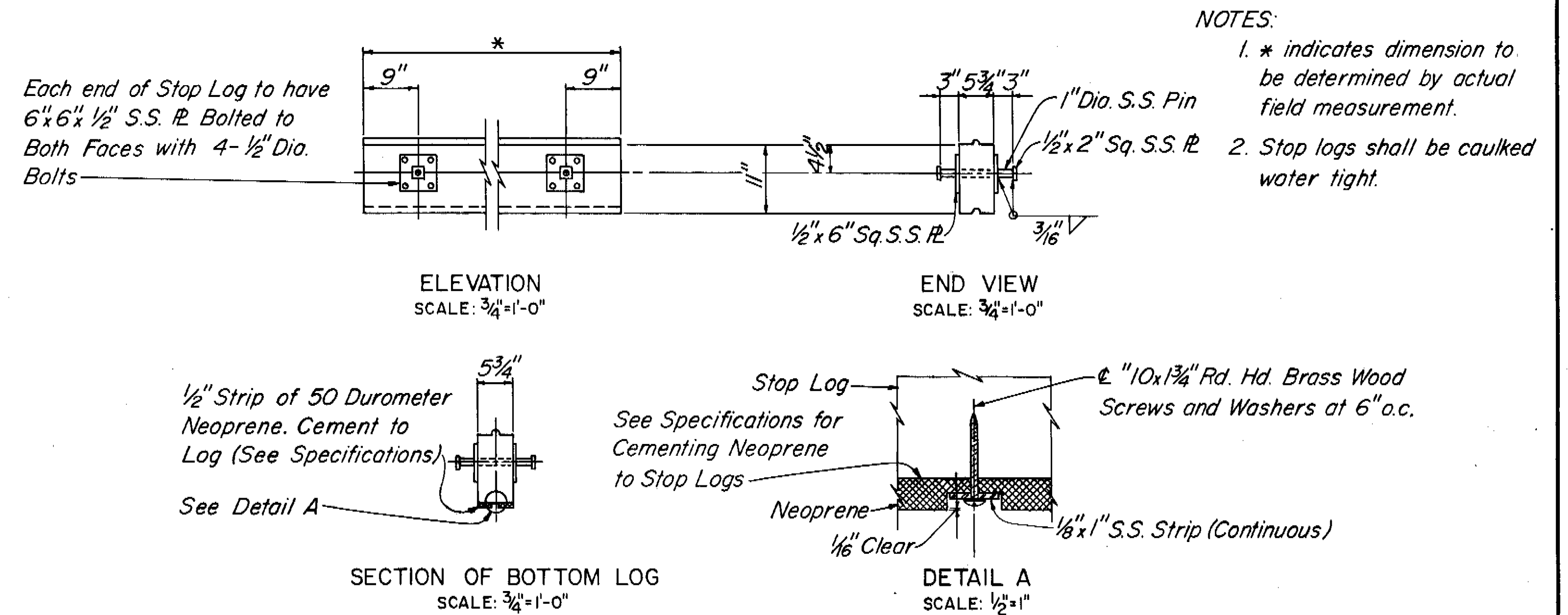
156-16



PROFILE  
BERMUDA BLVD.-SAXON ST. TO 24TH ST.  
SCALE: HORIZ. 1"=20'  
VERT. 1"=5'



MANHOLE DETAILS  
SCALE: 1/2"=1'-0"



STOP LOG DETAILS

NOTES:  
1. \* indicates dimension to be determined by actual field measurement.  
2. Stop logs shall be caulked water tight.

**AS BUILT**

<b>GREELEY AND HANSEN ENGINEERS</b> 222 S. RIVERSIDE PLAZA CHICAGO, ILLINOIS 60606	DESIGNED TLW	APPROVED	12/11/77 TLW Rev. Note in Plan	SCALE 0 20 40 FT 1"=20' 0 5 10 FT 1"=5' 0 2 3 4 5 FT 1/2"=1'-0"	CITY OF TAMPA, FLORIDA SEWAGE DISPOSAL SYSTEM 26TH STREET FORCE MAIN	DIVISION 4FI SEWER RELOCATION AND MISCELLANEOUS DETAILS	PROJ. NO. 8 202-70-30D 4FI
	DRAWN AA	DATE	12/11/77 TLW Relocate Air Release System				SHEET 16 OF 17
	CHECKED TLW	SUPT., DEPT. OF SANITARY SEWERS	8/24/77 TLW Add Stop Log Details				DATE JULY, 1972
		DATE	8/24/77 TLW Change Sheet Title				REV. 5
	GREELEY AND HANSEN, ENGINEERS	NO. DATE APP. REVISION	11/15/74 TLW Rev. entire sheet				

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